

BEETON'S MEDICAL DICTIONARY.

A Safe Guide for Every Family.

DEFINING, IN THE PLAINEST LANGUAGE,
THE SYMPTOMS AND TREATMENT
OF ALL
AILMENTS, ILLNESSES, AND DISEASES.

*With an Account of the Different Parts of the Human Body,
and of the Various Substances used in Medicine.*

AND FULL EXPLANATIONS OF MEDICAL AND SCIENTIFIC TERMS, &c.



LONDON:
WARD, LOCK, AND TYLER,
WARWICK HOUSE, PATERNOSTER ROW.

LONDON:
PRINTED BY J. OGDEN AND CO.,
172, ST. JOHN STREET, E.C.

PREFACE.

OF the laws which regulate Health, and of the science which comprises a knowledge of Medicine and Surgery, there is a general ignorance very much to be lamented. How many illnesses, and how much suffering, would not be averted, if a more sensible acquaintance with sanitary necessities existed in our homes ! Lack of cleanliness, want of ventilation, deficiency of water supply, non-knowledge of the functions of the body, blindness to first symptoms of disease, negligence of all wholesome precautions—these are culpable causes of accidents, diseases, and deaths. Do not all of us know cases wherein valuable and cherished lives of men, women, and children have been lost, solely or principally from ignorance of elementary principles affecting human life and health ? And it is sufficiently clear that, until people come to know more about the “house they live in,” they will never extirpate chronic disease, nor shall we possess a population healthy and happy.

There is, however, no good reason why a fair knowledge of medicine and the Philosophy of Health should not be gained by the general public ; there is nothing hard or repulsive about the subject, and an amount of information which may be of great value can be obtained at very little trouble. In our belief, Physiology and the Laws of Health should form a branch of education in every important school in the country. Knowing something of these, men and women would be enabled to care, rationally, for their health, could observe changes in their sensations suggestive of coming sickness, would have the ability to explain accurately to the doctor their particular symptoms of disorder, and so pave the way to fewer illnesses and quicker restorations to health. There is something curiously ironical in a state of things wherein we all bemoan the loss of health, and yet take no steps to learn anything about the object we prize.

Our object, in producing this book, is to furnish at the cheapest possible rate a clear and popular account of sanitary science and medical and surgical practice, in articles alphabetically arranged, and with references carefully and copiously made, so that a network of all kinds of precious information can be readily mastered. We know that it is, indeed, impossible through any



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Ablution.

A.

A [Gr. *a privative*] is a prefix of many medical terms in the sense of *not*, as *Anodyne*, *Aphyxia*. In prescriptions *a*, or *ad* [Gr. *ana*, of each] is used to denote that the specified quantity of each of the ingredients referred to is to be taken. *A.A.A.* in chemistry stand for *amalgama*, an amalgam, a combination of mercury with another metal.

ABLUTION [Lat. *abluo*, I wash away] denotes generally the removal of extraneous matters from any substance by washing. More particularly it is applied to the washing of the body, or any part of it, with water or other fluid. The body during life is constantly giving off effete matter by means of the pores. This, if not frequently removed by washing, accumulates on the surface of the skin, shuts up the pores, and prevents them from performing their proper functions. Hence the necessity of frequent ablutions of the body with pure water. (See *BATHS*, *HYDROPATHY*.)

AURASION [Lat. *abrado*, I scrape off] is a superficial injury where the external skin has been rubbed or torn off.

ABDOMEN, *ab-doh-men* [Lat. *abdo*, I hide], the belly, or lower part of the trunk, separated from the chest or upper part by the diaphragm. It contains the stomach, intestines, liver, spleen, pancreas, kidneys, &c., and is lined within by a membrane called the peritoneum. For convenience of description, the abdomen is divided horizontally into three regions,—the upper, or epigastric; the middle, or umbilical; and the lower, or hypogastric. It may also be divided longitudinally by two lines, when the above terms are confined to the central portion; the epigastric, having on each side the right and left hypochondriac; the umbilical, the right and left lumbar; and the hypogastric, the right and left iliac. From the number and variety of the parts which it contains the abdomen is subject to many diseases, which will be treated of under their several heads, as *PERITONEUM*, *STOMACH*, *LIVER*, *BOWELS*, &c.

ABDUCTOR MUSCLES, *ab-duk-tor*, are those muscles which draw one part of the body

Absorbents.

from another; as *adductor* muscles are those which draw one part of the body to another.

ABSCESSE [Lat. *abscessus*, from *abcedo*, I separate] is an accumulation of pus or matter in some tissue or organ of the human body. The pus is formed from the blood during the process of inflammation, and the production of it is termed suppuration. When suppuration has commenced, the pain loses its acute form, and becomes dull and throbbing; the swelling enlarges and becomes softer, and the tumour gradually assumes a somewhat conical shape at some part usually near the middle of its external surface, where the skin becomes thinner, and at length gives way, affording egress to the purulent matter. When the abscess is of considerable extent the formation of pus is frequently marked by constitutional symptoms, the previous inflammation is diminished, the skin becomes more moist, the pulse softer and more open, and irregular chills or rigors, succeeded by heat and a slight accession of fever, occur. Sometimes the matter of an abscess may be absorbed by the system, particularly where it has been of rapid formation, without much previous inflammation. Where this is not the case, it is in general of importance to bring it to maturity as early as possible by means of poultices and warm fomentations; and where it shows no tendency to find egress for itself, it should be opened. When an opening is formed in an abscess, and matter continues to be discharged from it, it is styled an ulcer. There are few tissues or organs of the body in which abscesses may not form. In some organs they are comparatively unimportant, in others they are highly dangerous.

ABSINTHINE, *ab-sin'-thene* [Gr. *a* without, *psinethos* pleasure], the bitter principle of wormwood, *Artemisia Absinthium*, which, when pure, occurs as yellowish powder. It is but slightly soluble in water, very soluble in alcohol, and less so in ether. It is used as to tomachic in dyspepsia, and also as an antithelmintic. It is further used in the preparation of absinthe and other liqueurs.

ABSORBENTS, *ab-sorb'-ents* [Lat. *absorbo*, I suck up], a name given in Anat. to certain small delicate vessels which imbibe fluids

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Absorption.

that come in contact with them, and carry them into the blood. They are denominated *lacteals* or *lymphatics*, according to the liquids which they convey. In Medicine the term is also employed to denote substances used to absorb or neutralize the acids sometimes formed in the stomach; chalk and magnesia are examples. In Surg., spongy substances used in dressing wounds, such as lint and amadou.

Absorption, in Physiol., a term employed to designate that natural function of the body which is exercised by the absorbent vessels; as the absorption of the chyle by the lacteal vessels. In Chemistry, the disappearance of a gaseous fluid on entering into combination with a liquid or solid is called absorption; thus, when the gas ammonia is passed into water, absorption takes place, and the result is the liquid commonly called spirits of hartshorn.

ABLUENT MEDICINES, *ab-loo-ent* [Lat. *abluo*, I wash away], a term formerly applied to those medicines which are used for purifying the blood.

ABSTINENCE, *ab-sti-nense* [Lat. *abstineo*, I abstain], the act or habit of refraining from something to which we have a propensity, or in which we find pleasure; but it is more particularly applied to the privation or sparing use of food. Abstinence has been enjoined and practised for various ends, as sanitary, moral, or religious. Physicians relate wonderful cures effected by abstinence; moralists, as the Pythagoreans, Stoicks, and others, recommend it as a means of bringing the animal part of our nature into greater subservience to the spiritual; and it is likewise enjoined by various religious sects. Where persons have suffered from long abstinence nourishment should be administered cautiously, and in very small quantities at a time, but frequently. It ought to be at first bland and farinaceous, with soups, and the heat of the body should be at the same time promoted by friction and other means. In the beginning of febrile and inflammatory diseases abstinence from solid or highly nutritive food is absolutely necessary.

ACACIA, *a-kash'-ea*, in Bot., a genus of plants belonging to the natural order *Leguminosae*, sub-order *Mimosae*. The *Acacia vera* yields gum arabic; and the inner wood of the *A. Catechu*, an Indian shrub, affords a kind of catechu, or cutch, rich in tannin, which is used for tanning, and, in Medicine, as an astringent.

ACARUS, *ak'-ar-u-s* [Gr. *akari*, a mite], the tick or mite, a genus of insects of the order *Aptero* or wingless. It contains various species, as the domestic mite, the itch mite (*Acarus Scabiei*, see *Ixca*), the harvest bug, the sugar mite, the red spider, &c. The bite of the harvest bug produces considerable inflammation and swelling of the part, with much itching. A solution of the

Acids.

aromatic spirit of ammonia will afford relief.

ACETABULUM, in Anat., is the term applied to that deep cup-like cavity of the os innominatum which receives the head of the femur, or thigh-bone, thus forming the hip-joint.

ACETARIOUS PLANTS, *a-se-tair'-e-us* [Lat. *acetaria*, a salad], plants such as endive, mustard-and-cress, lettuce, &c., used for salads.

ACETATE, *a-se-tat'*, in Chem., a compound formed by the union of acetic acid with a salifiable base, as potash, soda, ammonia, &c. These will be found under their respective bases. All the acetates are soluble in water.

ACETIC ACID, *a-set'-ik*, in Chem., is produced by the oxidation or destructive distillation of organic bodies containing its elements,—carbon, hydrogen, and oxygen. When pure, it is a colourless liquid of specific gravity 1.065, which crystallizes at a temperature below 60° F. It has a pungent smell, and is highly corrosive. Vinegar and pyroxilous acid are impure varieties of acetic acid. All liquids susceptible of the vinous fermentation are capable of yielding vinegar. Of these, the most important is wine, which becomes vinegar by spontaneous acidification. The chemical composition of acetic acid is represented by the symbol $C_2H_4O_2 + HO$. In Medicine it is used externally as a local irritant, and when diluted with water it forms an excellent cooling lotion. It is also useful as a gargle; and the vapour, when inhaled, is beneficial in various affections of the throat. Diluted acetic acid is formed by mixing one part of the acid with seven parts of distilled water. It is used internally as a cooling acidulous drink in cases of fever. Dose from one to two fluid drachms. It is sometimes taken to reduce corpulence, but this is not to be recommended, as it tends to injure the stomach, and may be productive of very serious results.

ACHILLES, TENDON, *a-kil'-te-en'-don* [Lat. *tendu Achilleis*], in Anat., a tendon which connects the soleus and gastrocnemius muscles of the calf of the leg with the bone of the heel. It takes its name from the fable of the mother of Achilles dipping him in the river Styx to render him invulnerable. During this operation she held him by the heel, and here he subsequently received his death-wound.

ACIDS, *a'-sid* [Lat. *acidus*, sour], a numerous and important class of chemical bodies, which are distinguished by the property of combining with bases to form salts. They are generally sour to the taste; in most instances they have a great affinity for water, and are soluble in it; they reddish nearly all the vegetable blues; they unite with metals or their oxides, alkalies, and earths. It was long held that oxygen was contained in all

Acidity of the Stomach.

the acids. This element does indeed enter into the composition of the greatest number; but it has been ascertained that in very many cases the acidifying principle is hydrogen. It has consequently been considered necessary to divide acids into *cry-acids*, formed by oxygen, and *hydriacids*, formed by hydrogen. These, again, are subdivided into *anhydrous acids*, or acids without water, and *hydrated acids*, or acids containing water. According, however, to the latest researches of chemists, all acids are hydriacids. The acids furnished by the mineral kingdom are termed *mineral acids*. *Metallic acids* are formed by the combination of oxygen and a metal; and *organic acids* are those which contain carbon, or are formed with organic substances. The two syllables *ous* and *ic* affixed to the names of acid compounds, indicate two different modifications; *ic* always denoting an acid which contains more oxygen than the acid whose name terminates in *ous*: for example, sulphuric acid has for its acidifying principle more oxygen than sulphurous acid. The most important of these chemical bodies are,—among the mineral acids sulphuric, sulphurous, hydrosulphuric, nitric, phosphoric, arsenious, arsenic, chromic, hydrofluoric, hydrochloric, chloric, iodic, carbonic, boracic, and silicic; among the organic acids, formic, hydrocyanic, oxalic, acetic, malic, tartaric, succinic, benzoic, citric, &c. (*See* these words.) Acids are extensively employed in Medicine, principally in cases of inflammation, fever, palpitation of the heart, and irritation of the skin.

ACIDITY OF THE STOMACH is one of the numerous forms in which indigestion manifests itself. Certain articles of diet have more particularly a tendency to produce this state, particularly butter, pastry, fish, vegetables, and certain kinds of soup. It is characterized by a disagreeable sensation in the stomach and a discharge of sour air or liquide upwards. The medicines known as absorbents are to be used, as a tea-spoonful of magnesia or of prepared chalk in a little water, which, acting chemically on the acid of the stomach, form an innocuous or salutary salt. Such remedies, however, are only temporary, and, if frequently had recourse to, tend to injure the stomach. Care should be taken, therefore, to avoid such articles of food as tend to produce this; the action of the stomach should be strengthened by tonics and the occasional use of gentle laxatives.

ACRE, *ak'-re*, an eruption of distinct, hard, inflamed tubercles or pimples, which are sometimes permanent for a considerable time, and sometimes suppurate very slowly and partially. They usually appear on the face, neck, or chest—rarely on other parts of the body. The disease arises from the accumulation of sebaceous matter in the follicles of the skin, which become dis-

Acorus.

tended and hard. They often present a blackish point on the surface, and hence are vulgarly known as "grabs," or "worms," in the skin. Medical men recognize four varieties of this disease. The treatment is by means of cooling laxatives and stimulating lotions, as Goulard water, with the avoidance of all stimulating food or drinks. They may also be often got rid of by pressing out the contents of the pustules with the fingers.

ACONITE, *ak'-o-nitē*, in Bot., the poisonous plant familiarly known as the monkshood, or wolfsbane. (*See Aconitum.*)

ACONITINE, or **ACONITIA,** *a-kō-nit'-ē-tē*, in Chem., a powerful vegetable alkaloid, prepared from the root of the *Aconitum Napellus*. It is one of the most virulent of poisons, but, at the same time, a very valuable medicine. (*See Aconitum.*) Externally applied, it produces on the skin a prickling sensation, which is followed by a peculiar numbness. An ointment containing aconitine is often used in cases of neuralgia.

ACONITUM, *a-kō-nit'-ūm*, in Bot., a genus of plants belonging to the natural order *Ranunculaceæ*, the Crowfoot or Buttercup family. Nearly all the species are poisonous; but when the extracts prepared from them are used in proper doses, their narcotic and diaphoretic effects prove highly beneficial. The flowers of many species are remarkable for their beauty, and resemble little helmets. The monkshood, *Aconitum Napellus*, is a native of Europe, and occurs in several parts of this country, particularly in Herefordshire, Devonshire, and Somersetshire, and is cultivated as a garden plant for the sake of its handsome purple flowers. This species is the officinal plant of our Pharmacopœia, and the preparations from it are used in the treatment of neuralgia, acute rheumatism, and diseases of the heart. An extract is formed from the leaves and a tincture from the root; dose of former, 1 to 2 grains, of latter 5 to 15 minims*. Its active principle is aconitine. (*See Aconitine.*) The root of the *A. heterophyllum* is said to possess no poisonous properties, and to have a high reputation in India as a febrifuge and antiperiodic medicine.

ACONITUS, *ak'-ko-nit'-üs* [Gr. *a*, without, and *kore*, pupil of the eye], the sweet flag, a member of the natural order *Cannabaceæ*. This plant grows in watery places, and abounds in the rivers of Norfolk, whence the London market was formerly supplied. It blossoms during the months of May and June. The thick creeping stem or rhizome, commonly called the root, is the valuable part of the plant; it is somewhat spongy, and powerfully aromatic, and has a bitterish taste. It is used by the rectifiers to improve the flavour of gin, and is also employed to give a peculiar taste and fragrance to certain kinds of beer. In Med., the

Acoustic Duct.

sweet-flag is sometimes used as an aromatic stimulant and a mild tonic, and many physicians speak highly of its beneficial effects in cases of ague.

Acoustic Duct, *d-koo'-stik*, a term applied to the *meatus auditorius externus*, or external passage of the ear. (*See EAR.*)

Acourssuer, *d-ku'-pre'-shur*, in Surg., is a method of arresting haemorrhage from cut arteries, recently introduced. It was first suggested by Sir J. Y. Simpson, and described by him in a communication to the Royal Society of Edinburgh, in 1859. Since that time it has come into extensive use; and while there are many who speak of it in the highest terms, there are not a few who are still opposed to it. It consists simply in substituting for the old system of tying the arteries, the compressing of them by means of pins or needles and iron wire. (*See "Acupressure: A New Method of Arresting Surgical Haemorrhage, and of Accelerating the Healing of Wounds."* By J. Y. Simpson. 1864.)

Acupuncture, *d-ku-punk'-ture* [Lat., *acus*, a needle, and *punctura*, a puncture], a surgical operation practised very extensively in the East, where it is performed by puncturing the part affected with a gold or silver needle. It has been practised both in Paris and England, with satisfactory results in different kinds of disease, principally neuralgic pains and chronic rheumatism. The needle, which is usually of steel, is passed by a slight rotatory motion to the required depth, and allowed to remain from a few minutes to several hours. The needles are sometimes used as conductors of the galvanic current to the deep-seated parts, and are sometimes made hollow in order to convey some sedative solution.

Acura is opposed to chronic, and is applied to diseases which are attended with violent symptoms, whose course is short and usually terminate in a few days in relief, cure, or death.

Adductor Muscles, *dd-duk'-tor* [Lat. *ad-ducere*, I draw towards], are those muscles which draw the parts to which they are attached together. They are opposed to the abductor muscles.

ADERS. (*See LARD.*)

ADHESION is the process by which parts, naturally separate, or separated by artificial means, become united. It is caused by the effusion of a lymph, or sticky fluid, produced by inflammation; and hence it is sometimes necessary to produce inflammation, by scraping or paring, in surfaces which it is desirable to unite. This tendency of inflamed surfaces to adhere when in contact is sometimes troublesome, as in inflammations of serous membranes.

ADHESIVE PLASTER, *plas'-ter*, commonly called strapping-plaster, is used to protect raw surfaces, and for dressing cuts, wounds, and ulcers. It is a gentle external stimu-

Aesculus.

lant, and assists the healing process. It is composed of lead-plaster (a mixture of *oxido* of lead and olive oil) melted over a slow fire, with powdered resin and hard soap mixed with it in the proportion of sixteen parts of lead plaster to two parts of powdered resin and one part of hard soap.

Adipose Tissue, *ad'-i-pos'* [Lat. *adeps*, soft fat], is a peculiar tissue or membrane composed of an aggregation of minute cells filled with fat, which they appropriate from the blood. This tissue serves several important purposes in the animal body; filling up interstices, forming a pad or cushion for the support of the movable parts, and assisting in the retention of heat.

ADULTERATION, *ad-ul-te-ra'-shun* [Lat. *adultero*, I falsify, corrupt], the introduction of cheap and often injurious materials into natural and manufactured products, for the purpose of increasing the profits on their sale. The practice is still unfortunately carried to a great extent, though legal enactments have been issued against it. The people themselves, unfortunately, are not sufficiently alive to their own interests. They look merely to what is called the cheapness of an article, without concerning themselves about its purity. Were they to make the latter the prime consideration, and avoid dealing with such as sold adulterated goods, the latter would soon find it to their interest to adopt fairer courses. Full particulars of the most common adulterations will be found under the heads of articles of food. (*See Flour, BAZAAR, Arrow-root, &c.*) When the adulteration consists of a mineral substance, its nature is readily determined by chemical analysis; but when it consists of an organic product, the aid of the microscope is required to find it out. The practice of adulteration has frequently led to fatal results.

AERATED WATERS, *ai-e-ra'-ted* [Gr. *aer*, air]. This term is applied to drinks in which water is impregnated with gases by pressure. The best known of these is the so-called soda-water, which generally consists of plain water charged with carbonic acid gas. This is effected by submitting the water to carbonic acid under a pressure of 30 or 40 lb. to the square inch, and bottling it off without any diminution of the pressure. On uncorking the bottle, the imprisoned gas is released, and taken into the stomach in the form of bubbles. Various mineral constituents, such as soda, potash, lithia, the salts of iron, and magnesia, are often introduced into the water with excellent medicinal effects. Aerated drinks, such as effervescent lemonade, are often impregnated with air only; but this is easily detected by the taste of the gas.

AESCRULUS, *ees'-ku-lus*, in Bot., the Horse-chestnut, a genus of the Soapwort order, or *Sapindaceæ*. *Aesculus Hippocastanum*, is the common horse-chestnut, is the typical spe-

Aethusa.

cies. Its bark, which contains a peculiar principle called *Aeculin*, is febrifugal, and is occasionally used in medicine, while its young leaves are somewhat aromatic, and have been substituted for hops. In France, large quantities of starch are obtained from the seeds, which in England are considered worthless. A peculiar oil, which is said to be a wonderful remedy for rheumatism, is also extracted from these seeds.

ÆTHEL. (See *ETHER*.)

AETHUSA, *a-thu'-sa*, in Bot., a genus of umbelliferous plants. *Aethusa Cynapium*, fool's parsley, is a common indigenous plant, highly poisonous, which has been frequently mistaken for parsley.

AFFINITY, or CHEMICAL ATTRACTION, is the force which causes the particles of dissimilar kinds of matter to combine together, so as to form new matter. This definition indicates the differences between affinity and cohesion, which is another modification of molecular attraction. Cohesion merely binds similar particles into a mass; affinity brings about the combination of heterogeneous particles, and causes them to lose their individual properties, and assume new forms. Chemical combinations do not take place indifferently, but in accordance with certain strict rules or laws. One substance will unite with another in preference to a third, or in some cases in preference to any other. This preference is denoted by the term *elective affinity*. By means of this discriminating action of affinity, some combinations may be *decomposed*. The attraction of one body for another is greatly modified by the circumstances under which the two bodies are brought together. Alteration of temperature is one of the causes which influence the force of chemical attraction. The discoveries of Faraday and others have established the fact, that whenever two substances unite to form a compound, they are in opposite electrical conditions; one being electro-negative, and the other electro-positive. This and other facts go to prove that chemical affinity is a particular modification of electrical attraction.

Agaricus, *a-gär'-ikus* [Gr. *agarikon*, a fungus], in Bot., the mushroom, a genus of fungi characterized by the pileus, or cap, being distinct from the stalk, and having on the under side numerous flakes or gills radiating from the centre. The genus comprehends an immense number of species, many of which are edible. They grow in wet and shady places in fields and woods, and on hotbeds prepared for their cultivation. The species of *Agaricus* commonly eaten in this country are *Agaricus campestris*, the common mushroom; *A. arvensis*, *A. Georgii*, and *A. oreocreas*. The last is the Champignon, which is highly esteemed for its savoury qualities. Many genera of fungi allied to the one under consideration include edible species, which are used for food in

Age.

this and other parts of the world. Dr. Badham enumerates no less than thirty fungi, natives of Britain, which are eaten by himself and his friends, and complains of the prejudice existing against several species which might form dainty and nutritious articles of food. However this may be, fatal cases of poisoning by fungi are not uncommon, and great care should be taken to ascertain whether a fungus is or is not poisonous, before introducing it into the market as a wholesome vegetable. There are no certain characters by which the edible and poisonous species may always be distinguished, but there are some general characters which help us to separate the two groups. Professor Bentley has tabulated those general characters as follows:—

Edible Mushrooms.

1. Grow solitary, in dry airy places.
2. Generally white or brownish.
3. Have a compact brittle flesh.
4. Do not change colour, when cut, by the action of the air.
5. Juice watery.
6. Odour agreeable.
7. Taste not bitter, acrid, salt, or astringent.

Poisonous Mushrooms.

1. Grow in clusters, in woods and dark damp places.
2. Usually with bright colours.
3. Flesh tough, soft, and watery.
4. Acquire a brown, green, or blue tint, when cut and exposed to the air.
5. Juice often milky.
6. Odour commonly powerful and disagreeable.
7. Have an acrid, astringent, acid, salt, or bitter taste.

Professor Bentley suggests that we should avoid all fungi which insects will not touch, and those which have scales or spots on their surface; and, further, that whatever may be the apparent qualities of the fungi, we should use with caution all which have arrived at their full development, or when they exhibit any signs of change. By soaking doubtful fungi, cut into slices, for about an hour in vinegar, and afterwards washing them in boiling water, we get rid of any poisonous principles they may possess, and the process will not spoil them for the table. (See Bentley's "Manual of Botany.")

Age, æj [Fr. *âge*], in Physiol. During the progress of life from infancy to manhood, and from manhood to old age, the body undergoes certain marked changes, which distinguish the different periods or stages of life. These are usually denominated ages, and are properly seven in number, though some make them fewer. They are:—
 1. Infancy. 2. Childhood. 3. Boyhood or Girlhood. 4. Adolescence. 5. Manhood or Womanhood. 6. Age. 7. Old Age. The first age commences at birth, and extends to the end of the second year, by which time the

Agrimonia.

first dentition is generally completed; the second extends to the end of the seventh or eighth year, when the second dentition is commonly over; the third extends to the age of puberty, which varies in different countries, but with us is from twelve to fourteen in the female, and from fourteen to sixteen in the male; the fourth extends to about the twentieth year in the female, and the twenty-fourth in the male; the fifth period extends in the female to about the forty-fifth or fiftieth year, when the power of procreation usually ceases, and in the male to about the forty-ninth or fiftieth year; the sixth period extends to the sixty-third year, when the seventh and last period of life commences.

AGRIMONIA, *ag-ri-mo'-ni-a*, in Bot., the Agrimony, a genus of dicotyledonous plants, belonging to the Rose order, or *Rosaceæ*. The species *A. Eupatoria* is one of our common roadside plants, and is found in flower about June. The leaves are very handsome, being large and deeply cut at the edge, and divided even down to the main stalk; the flowers are yellow, arranged on a long simple spike, with a little leaf at the base of each, and the fruit is beset with bristles. This plant has been used in medicine as a vermifuge and an astringent.

AGUE, or **INTERMITTENT FEVER**, *a'-gu* [Fr. *aigue*, sharp], is a disease generally occasioned by exhalations arising from marshy grounds, stagnant water, or decaying vegetable substance. It is characterized by a series of separate attacks, occurring at regular intervals of one or more days, according to which it is termed quotidian, tertian, or quartan. Each attack is divided into three stages, which follow each other in regular succession. The first, or cold stage, is characterized by a feeling of extreme cold and languor, and an uncontrollable tremor over the whole body. This is followed by the hot stage, when the skin becomes hot and dry, the pulse quick and full, and the features flushed. In the sweating stage, a profusion of sweat breaks out over the whole body, which continues for some time, and then the attack terminates. **Treatment.**—During the cold stage, warm baths, diluent drinks, as barley-water, toast-and-water, or weak tea, and such-like means, are to be given; in the hot stage, saline draughts, opium, and diaphoretics should be administered; and in the last stage, the patient is to be kept cool, and, if very weak, may receive a little wine or brandy-and-water. The general treatment in ague is to strengthen the system by means of tonics, such as quinine or Peruvian bark, which is the most valuable remedy in this disease. It is considered to be more efficacious in tolerably large doses than in frequent small ones—probably four or five grains three times a day.

Air, *air* [Gr. *aer*, air], is a term generally

Air-Beds.

applied to the atmosphere with which our globe is surrounded, and which is believed to extend to the height of about 45 miles. Air is not a simple body, but is a mechanical mixture of two gases, oxygen and nitrogen, with small quantities of water and carbonic acid, as follows:—

	By Measure.	By Weight.
Nitrogen	77.5	75.55
Oxygen	21	23.32
Water	1.42	1.03
Carbonic acid ..	.08	.10

These proportions, however, are not always the same, and sometimes minute quantities of ammonia, ozone, and certain other substances are detected. That air, in common with all other bodies, is possessed of weight, is proved by weighing a flask before and after it has been exhausted of air. According to Biot, 100 cubic inches weigh 31 grains. Heat causes air to expand; cold to contract. Thus, if a bladder is half filled with air and held near a fire it will expand until the bladder is quite full, and on being taken away it will gradually contract to its former bulk. Air being elastic and compressible, it follows that the higher we go the lighter the air becomes. The air analyzed at the foot of Chimborazo has the same composition as that analyzed at its summit, though it differs materially in density. The nitrogen of the atmosphere is believed to serve the purpose chiefly of diluting the oxygen and moderating its action. It is to the oxygen contained in the atmosphere that its chemical actions are mainly due. It is this that supports combustion, and sustains the respiration of animals. In the process of respiration the air is being constantly rendered impure by a portion of its oxygen being converted into carbonic acid. The average quantity of carbonic acid given out by the lungs constitutes about 4.48 per cent. of the expired air, and the quantity exhaled by a healthy man in 24 hours is estimated at 8 or 9 ounces. It is remarkable, however, that the more impure the air, or the greater the quantity of carbonic acid it already contains, the less is the amount exhaled. Knowing then the importance of a free excretion of carbonic acid, we see the necessity of breathing a pure air, and consequently the importance of ventilation, or of keeping up a constant supply of fresh air, particularly in rooms where a number of persons are breathing together. The carbonic acid which is given out in respiration is absorbed by plants, which, by converting the carbon to their own nourishment, set free the oxygen to serve again to support animal life.

Air-Beds. An air-bed consists of a sack, in the shape of a mattress, divided into a number of air-tight compartments, a projection at one end forming the bolster. Each compartment is provided with a valve, and

Albumen.

can be inflated with air by means of a bellows. Air-beds were known at the commencement of the 18th century; but, being manufactured of leather, were of considerable cost. They are now made of macintosh cloth and vulcanized india-rubber. Their advantages are coolness, elasticity, and portability, and they are especially valuable to invalids.

ALBUMEN., *al-bu'men* [Lat. *albus*, white]. In Chem., a whitish viscous matter, which forms an important element in vegetable and animal organic substances. It is distinguished by its peculiar property of becoming coagulated or insoluble at a high temperature. White of egg and serum of blood consist almost entirely of albumen. The hair and nails contain large quantities of it in its coagulated state. Pure albumen is insoluble in water. White of egg and serum contain a certain amount of free alkali, in which it is dissolved; hence its precipitation when acids are added. It is also precipitated when salts of mercury, copper, silver, lead, &c., are added to its solution, forming with them definite insoluble compounds. This property renders it valuable as an antidote to metallic poisons. Tannin, gallic acid, and extractive matter behave with it in a similar manner; for which reason it is used much in the arts as a clarifying agent. Its composition is given below, the presence of sulphur being rendered familiar to all by the effects of cooked eggs upon silver spoons.

Carbon	53.5
Hydrogen.....	7.0
Nitrogen	15.5
Oxygen.....	22.0
Phosphorus	0.4
Sulphur.....	1.6
100.0	

ALCHEMY., *al'kim-e* [Arab. *al*, the, Gr. *chemeia*, chemistry]. The term alchemist is generally applied, in an opprobrious sense, to the ancient chemists, who are vulgarly supposed to have been mere visionaries, searching after chimeras. The great end of all their researches was the discovery of the philosopher's stone, which was to have the power of transmuting all metals into gold. Although many of the alchemists were impostors, working upon the minds of the unenlightened for their own ends, still there were many really great men amongst them, who, by their genius and labours, have laid the foundations of modern chemistry. Such men as Paracelsus, Raymond Lully, Glanber, Friar Bacon, Van Helmont, Albertus Magnus, Basil Valentine, and a host of others, have left behind them enduring monuments of their greatness, in the form of medicines and preparations, indispensable to the chemist and pharmacist, even in these enlightened days.

ALCOHOL., *al'-ko-hol* [Arab. *al*, the, *kooch*,

Ale.

any volatile substance]. If a solution of sugar be exposed to the air for any length of time, no change will take place; but if vegetable or animal organic matter be present, fermentation commences, and a fresh principle is formed, which may be separated by distillation. The first distillate is comparatively weak; but by the use of caustic potash, which has a powerful affinity for water, absolute alcohol is obtained. Pure alcohol is colourless and limpid, pungent to the taste and smell. Its specific gravity at 60° is .7938. It boils at 173°, and has been rendered gelatinous by cold, but has never been frozen. It is very inflammable, and burns without smoke. It mixes with water in all proportions, and has a great attraction for it. Its solvent powers are great, especially with respect to resins and resinous gums. The strength of alcohol is in exact proportion to its density, which is estimated by means of a hydrometer. Excise proof spirit has a specific gravity of .918, and contains 49 per cent. of absolute alcohol. Wine, beer, and spirits owe their intoxicating properties to alcohol. The chemical composition of alcohol is C₂H₅O, and it is regarded by chemists as a hydrated oxide of the organic base ethyl; i.e. C₂H₅+HO. The alcohols are very numerous, their numbers being increased daily. Alcohol of different strengths is much used in the arts, as a solvent for varnishes, resins, and essential oils; as a fuel in spirit-lamps, as an antiseptic, and as a stimulant in Medicine. (See SPIRITS.) The following tables give the amount by measure of alcohol in various liquids:—

Spirits.

Hollands	57.60	Sherry (Amon-tillado).....	20.05
Scotch Whisky	54.32	Claret	15.10
ditto	53.90	Burgundy	14.57
Irish	53.68	Champagne	12.61
Rum	53.39	Hock	12.03
Brandy	53.39	Orange.....	11.26
		Elder	8.79
Wines.			
Raisin	25.12	Cider	5.21 to 9.87
Marsala	25.09	Ale (Burton) ..	8.88
Sherry (Brown)	23.01	(Edinburgh) ..	6.20
Port	22.96	Stout.....	6.80
Madeira	22.27	Porter	4.20
		Schnell Beer	1.23

ALDEHYDE., *al-de-hyde*. When alcohol is submitted to any process by which hydrogen is extracted from it (deoxidation, for instance), it becomes an aldehyde, every alcohol having its corresponding aldehyde. Ethylic, or vinous aldehyde, is limpid and colourless, with a peculiar and characteristic odour. Its density is .990; it boils at 72°, and is neutral to test-paper. On exposure to the air, it absorbs oxygen, and resorbs into acetic acid.

ALE., *ail* [Sax. *sala*, *eale*, or *aloth*], the name formerly given to unhopped malt

Ale.

liquor, but now applied to very strong and comparatively light-coloured beer. The hop was brought into this country from the Netherlands, in the reign of Henry VIII., and the word *beer*, from the German *bier*, was then employed to distinguish the hopped liquor from the more ancient beverage. The connection between hops and the word beer is indicated by the old couplet:—

"Hops, reformation, bays, and beer,
Came into England all in one year."

Ale made from malt alone was a favourite beverage of the ancient Germans, even in the time of Tacitus. It was, moreover, highly esteemed by the Danes and Anglo-Saxons, being even thought worthy of slaking the thirst of the mighty heroes in the Hall of Odin. Isidors and Orosius state that the ancient Britons and other Celtic nations drank ale, which they made by a process very similar to our modern brewing. They inform us that the grain was first steeped in water and made to germinate; it was then dried and ground; after which it was infused in a certain quantity of water, and the whole fermented. Ale was formerly regarded in England as an absolute necessary of life, and various ordinances or assizes have been passed for regulating its price and quality. Thus, "in 1251, during the reign of Henry III., an assize of bread and ale was struck, which settled the price of the latter article as follows:—'A brewer may sell two gallons of ale for a penny in cities, and three or four gallons for the same price in the country.' The penny of that time was worth about threepence of our currency. Some centuries since, ale took the place of our tea or coffee at breakfast. The earl of Northumberland, in the reign of Henry VIII., lived in the following manner:—'On flesh-days throughout the year, breakfast for my lord and lady was a loaf of bread, two manchetts, a quart of *beer*, a quart of wine, half a chine of mutton, or a chine of beef, boiled.' The same allowance of beer was included in the bill of fare for meagre days, when salt fish and buttered eggs were substituted for beef or mutton. Ale, as now distinguished from porter and small beer, is prepared from pale malt, and, except in the case of bitter ale, a comparatively small proportion of hops. Strong ale is made from the best malt and the finest kind of hops, such as the goldings and white-bines of Kent and Surrey, or the mild-flavoured flowers of Worcestershire. The fermentation is allowed to proceed slowly, until the yeast is exhausted, and perfectly separated. The Scotch ales are remarkable for the very small quantity of hops which they contain. Burton ale is a very strong wine-like product, which is highly esteemed. The bitter ales of Bass and Allsopp only differ from this chiefly in having a larger quantity of hops, which imparts a pleasant bitterness, and renders them less prone

Aliments.

to turn in hot climates. Strong ales contain from 5½ to 10 per cent., by weight, of alcohol. (See Johnston's "Chemistry of Common Life.")

ALGAE, *al'-jee* [Lat., sea-weeds], in Bot., comprehends the sea-weeds and the multifarious green vegetable forms of simple cellular structure met with in fresh water and in permanently damp situations. The humblest members of the vegetable kingdom belong to this class. Algae are flowerless, and consequently seedless. They are propagated in various ways by reproductive particles, called spores or sporules. The class comprehends a vast variety of plants, exhibiting a wonderful multiplicity of forms, colours, sizes, and degrees of complexity in structure. Professor Bentley roughly estimates the number of species of algae at 2,500. Many are used for food in different parts of the world, their nutritious properties being due to the presence of starch, mannite, mucilage, albumen, and gelose. The ashes of several kinds of sea-weeds form *kelp*, formerly extensively used for the preparation of carbonate of soda. Iodine is also obtained from sea-weeds. None of the plants in this great class are known to be poisonous.

ALGAROTTI, POWDER OF, *al'-ga-roth*, a mixture of the tetrachloride and toroxide of antimony, invented by Victor Algarotti, a Venetian chemist, formerly much used in medicine as an emetic.

ALIMENTARY CANAL, or DUCT, *al-i-men'-ta-re* [Lat. *alimentum*, nourishment, food], is the name given to that great canal or conduit in animal bodies through which the food passes from the mouth to the anus. It distinguishes animal from vegetable life, plants having no common receptacle for their food nor canal for carrying off the excrements. In the human subject, it comprises the pharynx, oesophagus or gullet, stomach, and large and small intestines, being, in a full-grown individual, nearly forty feet in length. (See DIGESTION, STOMACH, INTESTINES, &c.)

ALIMENTS, *al-i-men-ts* [Lat. *alimentum*, from *alo*, I nourish], a term applied to those substances which, upon being taken into the stomach, are capable of affording nourishment to the body. Every aliment must be derived from either the animal or vegetable kingdom, as the capacity of affording nourishment to the animal system would appear to belong exclusively to organized matter, or that which has possessed life. Nevertheless, certain substances appertaining to the inorganic kingdom, although incapable of themselves to form an aliment, have yet the power, when taken in conjunction with aliments, of assisting in the process of nutrition. These inorganic substances are principally water, salt, lime, &c. Aliments have been distinguished into nine classes. The first, or *Fermentous* class, includes barley, wheat, oats, rice, maize, potatoes, har-

BEETON'S MEDICAL DICTIONARY.

Alkali.

cots, lentils, peas, &c. The second, or *Mucilaginous* class, comprehends melons, cabbages, turnips, beet-root, carrots, asparagus, &c. The third, or *Sweet* class of alimenta, includes dates, apricots, dried grapes, figs, the various sorts of sugars, &c. In the fourth, or *Acidulous* class, are grapes, strawberries, raspberries, mulberries, pears, prunes, apples, cherries, oranges, gooseberries, &c. In the fifth, or *Fatty* class, there are animal fats, oils, butter, cocoas, nuts, walnuts, olives, sweet almonds, &c. The sixth, or *Caceous* class, includes the various sorts of milk, cheese, &c. In the seventh, or *Gelatinous* class, there are several kinds of fish, the flesh of young animals, calf's-foot, &c. In the eighth, or *Albuminous* class, there are included brain, eggs, &c. The ninth, or *Fibrinous* class, comprehends the flesh and the blood of various animals. To these nine divisions a tenth may be added, comprehending the *Condiments*, as pepper, salt, mustard, vinegar, horseradish, &c. Certain liquids; or *Driaks*, should also be reckoned among the alimenta, as water of various kinds (spring-water, well-water, river-water), the infusions of tea and coffee, the various kinds of fermented liquors, as cider, Perry, beer, wine, &c.; the alcoholic liquors, as gin, whisky, brandy, &c. As a rule, alimenta require to be prepared by cooking, so as to be made more agreeable to the palate, or more easy of digestion, but few alimenta being used in an undressed or natural condition. (See Food.)

ALKALI. *al'-ka-ly* [Arab. *al-kali*, soda]. This term is applied, in Chem., to a class of substances characterized by the energy with which they combine with acids, by their acridity and caustic property, and by their action on vegetable colours. The ancient chemists included only three substances under this name—vegetable alkali, or soda; mineral alkali, or potash; and volatile alkali, or ammonia. To these, modern chemists add three alkalies proper—lithia, caesia, and rubidia, and the alkaline earths—lime, strontia, barita, magnesia, and a number of others too rare to need mention. With the exception of ammonia, these alkalies are all oxides of metals, called alkaline and alkaline-earth metals. The pure form of these oxides is called the caustic state, from the burning properties possessed by them all when not combined with any acid. When they are in combination with carbonic acid, which is a very weak acid, they are said to be in their mild form, and still preserve, in a minor degree, many of their characteristics as alkalies. Many vegetable substances—such as bark, opium, nightshade, and others—possess crystalline principles which, from behaving like alkalies, have been named alkaloids. Quinine, morphine, and atropine, are examples of these. Most of these form salts with acids; for instance, we have desulphate of quinine, acetate of

Allium.

morphine, and so on. In Medicine, alkalies and their carbonates, when taken internally, act chemically in counteracting or neutralizing acidity in the stomach or bowels. When absorbed into the system, they serve to diminish acidity of the secretions. They tend, also, to allay irritation, and are thus useful in certain kinds of cutaneous eruptions; but their frequent use is injurious.

ALKALOIDS, VEGETABLE. *al'-ka-lo-toids* [Arab. *alkali*, Gr. *eidos*, likeness]. The discovery of these substances is one of the most remarkable of modern chemistry. They are all sulfifiable bases, found in various vegetable substances, and are similar in their actions to the mineral alkalies mentioned above, uniting with acids to form salts. They are violent poisons, highly nitrogenous, sparingly soluble in water, but more so in alcohol and dilute acids. They are prepared by boiling the substance containing them in dilute hydrochloric acid, neutralizing by a mineral alkali where the alkaloid is precipitated in an insoluble form. The following is a list of the principal vegetable alkaloids, and the substances from which they are derived. They are of the greatest value in Medicine, the exhibition of the fraction of a grain being attended with the most marked curative results. They are often found in books with the termination *ine* instead of *is*, the latter being the more correct:—

Morphia, from opium.

Quinia } from Peruvian bark.

Cinchonia } from Peru.

Strychnia, from nux vomica.

Veratria, from hellebore.

Atropia } from belladonna.

Hyoscyamia } from tobacco.

Nicotia, from tobacco.

Aconitia, from aconite.

ALLIUM. *al'-li-u-m* [Lat. garlic], in Bot., a genus of plants belonging to the nat. ord. Liliaceae, the Lily tribe. Many species are very familiar plants, being largely cultivated for the sake of their nutritious and pungent bulbs; such are *Allium Cepa*, the onion; *A. sativum*, the garlic; *A. Porrum*, the leek; and *A. ascalonicum*, the shalot. All these species are characterized by a strong, and, to most people, an extremely disagreeable odour. The substance which gives the garlic and onion their pungent smell and flavour is a compound oil, called by chemists sulphide of allyl. In England the onion is used much more frequently than any other species. In France the garlic is held in great esteem, and employed to flavour almost every savoury dish. In Spain and Portugal the two bulbs are employed rather as every-day articles of food than as mere condiments; while the Arab, Moorish, and Ethiopian tribes are even greater devourers of garlic and onions than the inhabitants of the Peninsula. The different species of *Allium*, when cultivated in warm climates,

Allopathy.

lose much of their pungency; hence the mild flavour of the Spanish onion. The bulb of the common garlic, *Allium sativum*, though rarely used by the medical practitioner, is known to have properties which might render it a valuable agent in the treatment of some diseases. When taken internally, it is tonic, stimulant, expectorant, and diuretic. Externally it acts as a local irritant and resolvent, and is employed as an antispasmodic liniment for infantile convulsions.

ALLOPATHY [Gr. *allo*, other or different, and *pathos*, disease] is a term used to denote the method of curing disease by means of remedies which are believed to act contrary to the nature of the disease sought to be cured. It is applied to the ordinary system to distinguish it from Homœopathy. (See HOMŒOPATHY.)

ALLSPICE, *all'-spice*, the dried unripe fruit of the *Eugenia Pimenta*, a plant of the Myrtle order. It is much used as a spice, and is thought to combine the flavours of cinnamon, cloves, and nutmeg; hence its common name. It is sometimes called Jamaica pepper, from the island in which it is chiefly cultivated, and sometimes pimento. It is an aromatic stimulant and tonic, and is used in dyspepsia, flatulence, &c. Dose, from 10 to 30 grains.

ARMONIA. (See AXYGAULUS.)

AZORE, *az'-o* [Lat.], in Bot., a genus of monocotyledonous plants, belonging to the nat. ord. *Liliaceæ*, the Lily tribe. There are several species, all natives of warm climates, but capable of being cultivated in colder regions as ornamental garden plants. The leaves are succulent, and edged with spines; they yield the juice which, when inspissated, constitutes the bitter drug called aloës. The flowers are usually red, growing in a bunch at the top of the stem.

ALOE, a drug used medicinally in small doses as a tonic, and in larger doses as a purgative and an emmenagogue. It is the inspissated juice of the leaves of various species of *Aloe*. There are several commercial species imported, but the origin of some is not accurately determined. Barbadoes aloës is obtained from the species *Aloe vulgaris*. Both socotrinae and hepatic aloës are probably prepared from *A. socotrina* and *A. purnea*; for the difference between the two kinds may be accounted for by a difference in the mode of treating the juice. Thus, when the juice from the species *A. socotrina* is inspissated by artificial heat, the product resembles socotrina aloës; but when it is allowed to dry up without the aid of artificial heat, it resembles hepatic aloës. Cape aloës is chiefly obtained from *A. plicata*; Indian aloës from *A. indica*; but the varieties known as horse or cabaline aloës, Mocha aloës, and Curacao aloës, have not been traced to their respective sources. Aloës acts chiefly on the lower bowels, and

Alum.

therefore should not be used when there is a tendency to piles. It is employed in a variety of forms, as extract, decoction, tincture, wine, powder, pills, simple or in composition with iron, myrrh, or assafetida. It is also used in the form of enemas for dislodging small worms from the rectum. The dose of aloës is from 2 to 6 grains.

ALTERATIVES, *al'-te-ra-tives* [Lat. *altero*, I change], is a term employed to denote a class of remedies that have the power of gradually changing the state and condition of the functions, secretions, &c., of the human body. Alternatives are usually administered in frequent small doses, continued for some time, and they effect their purpose slowly or imperceptibly. In this way some of our most active and even poisonous drugs produce very beneficial effects.

ALTHEA, *al'-the-a* [Gr. *altheo*, I heal], the marshmallow, a genus of plants belonging to the nat. ord. *Malvaceæ*. The species *A. officinalis*, the common marshmallow or wymote, is an indigenous perennial, growing in salt marshes near the sea, and on the banks of rivers, blossoming during August and September. Its flowers, which are rather large and rose-coloured, are arranged, three or four together, on axillary stalks. The leaves are hoary, green, odourless, soft, and downy, having a mucilaginous taste. The whole plant abounds in mucilage, particularly the root, which is used in Medicine. In France, marshmallow is a favourite demulcent. The famous *pâté de Guisane* is composed of the substances obtained from the root, with gum-arabic, sugar, and white of egg. Buchner states that the chief constituents of the marshmallow root are a fatty oil, starch, glutinous matter, uncry stallizable sugar, althein, and mucilage. Its chief principle, *althein*, is identical with *asparagine*. It is crystallizable, odourless, and almost tasteless. In Medicine, this plant is used as a demulcent in visceral inflammations and affections of the mucous membran, as bronchitis, diarrhoea, &c. It is also sometimes used as an emollient in the form of a poultice or a fomentation for external sores.

ALUM, *al'-um* [Lat. *alumen*], a salt consisting of sulphate of alumina in combination with sulphate of potash, soda, or ammonia. Alum is obtained by submitting alum-shale, which consists of alumina, iron pyrites, and coaly matter, to the action of fire in enormous heaps for one or two years. During the combustion, the sulphur of the iron pyrites (sulphide of iron) combines with the oxygen and alumina, forming sulphate of alumina, which is dissolved out of the cooled mass by water. This solution is then converted into alum by the addition of either sulphate of potash or sulphate of ammonia, the latter being most generally used on account of its cheapness. The principal

Alum.

sources of alum-shale are at Hurlet and Campsie, near Glasgow, and at Whitby, in Yorkshire. Alum is also manufactured in great quantities by Spence's process from various materials derived from coal and from the coal strata. Ammonia alum is more valuable than potash alum, from containing 11.90 per cent. of alumina, which is the active ingredient, while potash alum contains but 10.82 per cent. It has taken the place of the other in the last edition of the British Pharmacopoeia. Alum acts chemically as an astringent on the animal fluids and tissues. It is used externally or internally, and serves to check hemorrhage, diminish secretions, &c.; hence it is frequently given in diarrhoea. When taken internally in large doses it produces nausea, vomiting, purging, &c. Usual dose, from 10 to 20 grains. It produces contraction or corrugation of the tissues, and hence is useful as a gargle, a wash, or an injection. It is one of the most successful remedies that have been employed in lead colic. Alum is soluble in about 18 parts of water at 60°. In the form of powder it is slightly caustic. When pure it is without odour, colourless, of a sweetish, acidulous, and powerfully astringent taste. Mu-lin dipped in a solution of alum is rendered incombusable.

ALUM, COMPOUND SOLUTION OF; or BATES'S ALUM WATER, is a powerful astringent lotion, composed of one ounce each of alum and sulphate of zinc, dissolved in one pint of boiling water and afterwards strained. It is used as a wash to old sores, and diluted with rose-water, as an eye-wash and injection.

AMADOU, *am'-a-doo* [Lat. *ad manum dulce*, soft to the touch], a spongy substance, generally known as German tinder, which can be ignited by a spark from a flint and steel. It is prepared by soaking thin slices of the fungi *Polyporus ignarius* and *fomentarius* in a solution of nitrate of potash (saltpetre), after they have been softened by beating with a mallet. Similar slices not treated with the salt are sometimes used in Surg. to give support to affected parts, and also to restrain hemorrhage. When impregnated with gunpowder, the prepared fungus forms black amadou.

AMALGAM, *a-mdl'-gam* [Gr. *malagma*, that which is made soft]—Mercury mixed with any metal with which it will combine forms a pasty or fluid mass called an amalgam, and is, in fact, an alloy of mercury. Amalgam for electrical machines is made by adding tinfoil in small pieces to mercury, until they form a paste.

AMAUROUS, *am'-aw-ro'-sis* [Gr. *ameuroς*, obscure], is a blindness or obscurity of vision, proceeding from a diseased state of the optic nerve, or of that part of the brain in connection with it. It generally comes on gradually, with dimness or confusion of sight, variations of colour, or the presence

Ammonia.

of floating objects called *specre*. It is commonly occasioned by long-continued over-exertion of the organs of vision, or by sudden exposure to a bright light, or it may proceed from a disordered state of the stomach. It is also sometimes hereditary. It may be permanent, or only temporary. It is owing to congestion or chronic inflammation of the nerves connected with sight, and is to be treated by depletion by blood-letting or cupping in the back of the neck, behind the ears, or on the temples, by counter irritants, as blisters or setons, by purgatives, and by mercury administered in frequent doses to the extent of affecting the gums. The eye is at the same time to be kept in a state of perfect repose.

AMBULANCE, *am'-bu-lans* [Lat. *ambula*, I walk], a term derived from the French, and applied to those moving hospitals which accompany every army, or division of an army, in the field, furnished with all the requisites for the succour of the sick or wounded. It is also applied to the waggon or carts provided for conveying the wounded from the field of battle. The latter are termed by the French *ambulances volantes*, and were first introduced in 1793, by Larrey, the celebrated French military surgeon.

AMMONIA, VOLATILE ALKALI, ALKALINE AIR, AMMONIACAL GAS, SPIRITS OF HARTSHORN, *am'-no'-ni-a*, is a gaseous compound, possessing the properties of the alkalies proper—potash and soda. It was known in a liquid form long before the gas itself was discovered. This was first done by Priestley, in the year 1774, who named it alkaline air. He procured it from sal-ammoniac; whence its name. Ammonia is composed of three parts of hydrogen to one of nitrogen, but it cannot be formed by the direct combination of these elements. When, however, nascent hydrogen and nitrogen are eliminated by any chemical action, a portion of ammonia is always found in the resulting compound. It is also formed during the distillation of coal in gasworks, the ammoniacal liquor produced in this way being the great source of ammonia for commercial purposes. Ammonia is easily liquefied by the combined action of a pressure of 6*1* atmospheres and a temperature of 32°. By submitting this liquid to the action of solid carbonic acid, solid ammonia is produced. Ammonia, when pure, is a transparent colourless gas, with a strong alkaline taste and a pungent, suffocating odour. It does not support either combustion or life, and inflames with difficulty. It is readily absorbed by water, which takes up 670 times its own volume of the gas, forming the liquor ammonia of the chemist, or liquid ammonia, as it is generally improperly called. Ammonia is found in very small quantities in the air, being evolved during the decomposition of most animal substances, more especially excrements and urine. Ammonia,

Ammonia.

diluted, and in proper doses, acts upon the system as an alkali and stimulant. It is also used by inhalation through the nostrils in cases of fainting, hysteria, epilepsy, cephalalgia, &c. Externally it is irritant and caustic; internally, in large doses, it produces irritation of the stomach, nausea, vomiting, and death. It is also fatal if inhaled alone. In the case of poisoning by the vapour of ammonia, the vapour of hot vinegar should be inhaled. Ammonia forms an infinite number of salts with the different acids, most of them similar in their properties to the corresponding salts of potash and soda. *Ammonia, Solution of Acetate of, or Spirit of Milderus,* is composed of 10 fluid ounces of acetic acid, $\frac{3}{4}$ ounces of carbonate of ammonia, and $\frac{1}{2}$ pint of distilled water. In doses of from 2 to 6 fluid drachms it is given as a refrigerant in fevers and inflammatory diseases. As a diaphoretic, its operations should be promoted by the use of tepid diluents and external warmth. Diluted with water, it is also sometimes used as a lotion to inflamed or bruised parts.—*Ammonia, Benzoate of,* is composed of 3 fluid ounces of solution of ammonia, 2 ounces of Benzoic acid, and 4 fluid ounces of distilled water. It is used as a diuretic, and in inflammation of the bladder, to counteract an alkaline state of the urine. Dose, from 10 to 20 grains.—*Ammonia (Carbonate of), Sal Volatile, or Smelling Salts.* The sesqui-carbonate of ammonia is a volatile and pungent ammoniacal salt, produced by submitting a mixture of sulphate of ammonia or chloride of ammonium and carbonate of lime to sublimation. A solution of carbonate of ammonia, consisting of $\frac{1}{4}$ ounce, dissolved in 10 fluid ounces of distilled water, is used as an antiseptic stimulant and diaphoretic and in large doses as an emetic.—*Ammonia Aqua, Ammonia (Liquid), Ammonia Liquor, Ammonia (Solution of).* The solution of gaseous ammonia in water is called by all the above names. It is a colourless transparent liquid, having a characteristic pungent smell, a burning caustic taste, and a strong alkaline reaction. At its greatest strength, its specific gravity is .850, and it can only be kept in closely stoppered bottles. It is made by passing the gas through distilled water kept near freezing-point by means of ice. It is of great use in the laboratory as a reagent, dissolving many oxides and salts insoluble in water. It is employed in Medicine as a stimulant. There are two degrees of strength used, — the liquor ammonia fortior of .850, and the ordinary liquor ammonia or spirits of hartshorn, of .660. Mixed with oil, with which it forms a soap, it is used as a rubefacient, under the name of soap-liniment.—*Ammonia, Solution of Citrate of,* is composed of 3 ounces of citric acid, $\frac{1}{2}$ fluid ounces of strong solution of ammonia, and 1 pint of

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distilled water. Its properties and uses are similar to those of solution of acetate of ammonia, but it is more pleasant to the taste. Dose, 2 to 6 fluid drachms.—*Ammonia, Hydrochlorate, or Muriate of, Chloride of Ammonium, or Sal Ammoniac,* is a compound of hydrochloric acid and ammonia, NH_3Cl . It is used as a diaphoretic, diuretic, purgative, and emetic. Externally, when dissolved along with an equal quantity of nitre, it forms an excellent refrigerant lotion. It is also used as a discutient for dispelling tumours.

AMMONIACUM., *am-mo-ni'-a-kum*, a fetid gum resin which exudes from the stem of an umbelliferous plant known to botanists as *Dorema ammoniacum*, growing in Persia and the adjacent parts of Asia. It is occasionally prescribed as an expectorant, and is applied externally to promote the absorption of tumours and chronic swellings of the joints. Dose, from 10 to 20 grains.

AMMONIUM.—The existence of a hypothetical compound metal called ammonium, and having the constitution NH_4 , has been assumed as the only method of explaining the perfect analogy that exists between the salts of ammonia and those of the various metals. An equivalent of ammonia united to an equivalent of water is supposed to form the oxide of this metal, $\text{NH}_3 + \text{HO} = (\text{NH}_4)_2\text{O}$, corresponding to potassa, the oxide of potassium, KO .

AMOMUM., *a-mo'-mum*, in Bot., a gen. of plants belonging to the nat. ord. *Zingiberaceæ*, the Ginger family. Several species have aromatic seeds, which are used medicinally and as spices in many parts of the world. *A. melegueta* is a native of Western Africa, and yields the so-called grains of Paradise, or Guinea pepper, used in this country in veterinary medicine, and for giving pungency to beer, wine, spirits, and vinegar. Most of the fruits called cardamoms, so largely employed in medicine as stimulants, are produced by plants included in this genus; thus *A. cardamomum* yields the round cardamoms; *A. maximum*, the Java; *A. Korarina*, the korarima; and *A. globosum*, both the large and small round China cardamoms.

AMORPHOUS., *a-mor'-fus*, in Chem. and Min., substances are said to be *amorphous* when they do not assume any crystalline form.

AMPUTATION., *am-pu-ta'-shun* [Lat. *amputo*, I prune or lop off], in Surg., is a term employed to denote the operation of cutting off a limb or some part of the body. The human frame is so constituted that if one member be diseased, the whole body suffers with it; and frequently the life of an individual may depend upon the removal of an injured or diseased member. The ancients, while they saw the necessity of cutting off a limb, shrank from the operation with dismay, for they knew of no means of stopping

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the hemorrhage but red-hot irons and boiling oil of resin; and hence, besides the suffering entailed upon the patient, their operations were seldom successful. The advance of modern surgery is here very marked, not only in the improved methods and appliances for operating; but, from their increased knowledge of the human body, surgeons are now able to determine with far greater accuracy when an operation is necessary, or, by a minor operation, are able frequently to save a limb, little or at all impaired, which even half a century ago would have been ruthlessly sacrificed; while the recent introduction of anaesthetics has been of inestimable value to the patient. The term is usually confined to operations on the limbs or extremities, for operations on other parts the term "excision" is more commonly used. An amputation may be performed by what is termed the circular, the double-flap, or the single-flap operation. In proceeding to amputate, the patient is first placed in a convenient position, and the main artery is compressed by the tourniquet (*vide Touquinque*) or by the hand of a skilled assistant. The circular operation is performed by first detaching the skin a short distance below where the amputation is to be made. It is then drawn upwards, and the muscles divided down to the bone, which is then sawn through. The arteries are then seized with a small forceps, drawn slightly out, and secured by a thread torsion, or acupressure (*q. v.*), after which the skin is brought over the wound, and either stitched or held together by strips of adhesive plaster. The double-flap operation differs from the above, in that the skin and muscles are cut down in a slanting manner, on opposite sides, so as to form two flaps, which are then drawn up, and the knife carried round the bone, dividing any flesh that may still be adhering to it; after which the surgeon saws the bone. It is objected to this method, that it makes a greater wound, and that the arteries, from being cut obliquely, will be less securely tied; but it is in favour with many, who maintain that there is little force in these objections, and that they are more than compensated for by the greater protection afforded by the flaps to the bone. The single-flap operation is seldom resorted to, unless where a portion of the limb is destroyed on one side, and it becomes necessary to take the flap from the opposite side. (*See Ferguson's "Manual of Surgery."*)

AMYGDALIN, *am-i'-dg-al-in*, a white crystalline solid, found in bitter almonds, peach-kernels, and laurel-leaves. By the action of the alkalies, amygdalic acid may be formed. Sweet almonds contain no amygdalin.

AMYGDALUS, *am-i'-dg-al-us* [*Gr. amygdale*, almond], a gen. of plants belonging to the nat. ord. *Rosaceæ*. The typical species is *Amygdalus communis*, the almond-tree, of which there are two varieties; namely,

Anacardium.

A. communis var. *deliciosa*, yielding sweet almonds, and *A. communis* var. *amara*, which produces bitter almonds. The almond-tree grows wild in Syria and other parts of Asia, also in northern Africa, and is extensively cultivated in the southern parts of Europe. In England it is grown more for the sake of its early spring blossoms than for its fruit, which seldom comes to perfection. A fixed oil, commonly known as oil of almonds, is obtained by expression from sweet almonds, and the residue, which contains gum, vegetable albumen, and emulsion, is sold under the name of almond-powder. Bitter almonds yield a similar oil. They also contain emulsion, and, in addition to this and the other constituents of sweet almonds, a nitrogenous substance, called *amygdalin*. When bitter almonds are moistened with water, the emulsion and amygdalin mutually react upon each other, and form a poisonous volatile oil, which is known as the essential oil of bitter almonds, and which is used, in small quantities, for flavouring custards and pastry, also for scenting soaps. *Amygdalus persica* is the peach-tree of our gardens, and a variety of the same species produces the nectarine. Peach-blossoms have been employed in Medicine as a vermifuge, and the kernel of the fruit may be used for the same purposes as the bitter almond.

AMYL, *am'-il* [C_6H_{11}], a compound radicle, discovered by Franklin, by acting on iodide of amyl with zinc. It is an oily liquid, boiling at 31° , and homologous with methyl, ethyl, &c. Like them, it forms an oxide or ether, and a hydrated oxide, or alcohol.

Amylic alcohol $C_6H_{12}O_2$, is formed during the distillation of common alcohol from grain or potatoes by the decomposition of the starch contained in them; hence its name. The fusel, or fousel oil of potash-spirit, consists almost entirely of amylic alcohol. It is this substance that gives to many spirits their noxious properties. It may be easily recognized by rubbing a few drops of the spirit on the hands; the vinous alcohol and water evaporate first, leaving the amylic alcohol behind, which is easily recognized by its characteristic odour. It gives to spirits a fiery acid taste, and is most commonly found in inferior rum. When distilled with dilute sulphuric acid and bichromate of potash, it yields valeric (which see), the salts of which are much used in Medicine. Heated with dry phosphoric acid, a hydrocarbon, called amylen, is formed, which has been much used as an anaesthetic.

ANACARDIUM, *an-a-kar'-di-um* [*Gr. an-*, with, *kardia*, the heart], in Bot., a gen. of plants belonging to the nat. ord. *Anacardiaceæ*. The species *A. occidentale*, the cashew-nut, a native of the West Indies, is remarkable for its large, fleshy peduncle, which is eaten as a fruit, and its juice, when fermented, forms a kind of wine.

Anacyclus.

ANACYCLUS, *an-a-si'-klus* [Gr. *ana*, in the form of, and *kyklos*, a circle], in Bot., a gen. of plants belonging to the nat. ord. *Compositae*. The root of *A. pyrethrum*, pollytory of Spain, is employed in Medicine as an energetic local irritant and sialagogue, its properties depending on the presence of a volatile oil.

ANEMIA, *a-ne'-me-ia* [Gr. *a*, not, and *aima*, blood], in Path., a term used to denote a deficiency of blood, or of the red globules which constitute its colouring matter. It is usually symptomatic of other maladies, but sometimes it occurs as a distinct disease. It is characterized by a pale waxy complexion, and a pallor in those parts, as the lips, which are generally suffused. It is to be treated with pure air, nourishing diet, and tonics, such as iron.

ANESTHESIA, *a-nes'-the-ti-ah* [Gr. *a*, privative, and *esthezomai*, I feel], a term given to those substances which produce insensibility in the whole or part of the human body, generally by acting on the nervous system. The most familiar instance of anaesthesia is that produced by an overdose of alcohol, in the case of drunken people, who become utterly insensible to pain. Nitrous oxide, or laughing-gas, was the first anaesthetic which was used for the production of insensibility to pain under surgical operations, having been first suggested by Sir H. Davy, and first employed by Dr. Wells, an American, in 1844. In 1846 Dr. Morton, of Boston, a former pupil and partner of Dr. Wells, introduced sulphuric ether as an anaesthetic, and it came rapidly into use. In November, 1847, the anaesthetic effects of chloroform were discovered by Sir James Y. Simpson, and it at once came into general use. (See *Oncoscopy*.) The injurious effects attributed to it are so few and far between as to be as nothing compared with the benefits which it has conferred. Countless lives have been saved by it; and operations have been performed under its influence, that surgeons would not have dreamt of attempting before its introduction. Various other agents have been used as anaesthetics. Indeed there is reason to believe that they were not unknown to the ancients, and that mandragora was used for this end. In China a preparation of hemp or ma-yo is said to have been used 1,500 years ago to annul pain in surgical operations. The effects of cold to produce insensibility to pain are well known, and hence local anaesthesia is frequently brought about by some freezing mixture, as powdered ice and salt. Ether spray is also used for the same purpose. A new anaesthetic, chloral, has lately been introduced. (See *Ornloal*.)

ANALEPSIS, *an-a-lep'-sis* [Gr. *analepsis*, resuming recovery], a term applied to those means that are resort ed to, to restore the body to a state of health, whether medicines, diet, or regimen.

Anamirta.

ANALYSIS, *a-nal'-i-sis* [Gr. *analuo*, I loosen or untie], in Chem., is the term applied to that important branch of research which has for its object the determination of the constituent parts of compound substances. The word is also used, in a restricted sense, to denote a series of operations for ascertaining the constituents of a single compound. We may therefore speak generally of chemical analysis, or refer particularly to the analysis of a certain salt. Analysis, being the separation of the component parts of a substance, is directly opposed to *synthesis*, which may be defined as the putting together of elements so as to form a compound. In most analytical operations, however, the chemist works by synthesis, as he usually separates two bodies by means of a third, which unites with one of them, and sets the other free. (See *AFFINITY*.) It is not always necessary to actually separate the component parts in order to ascertain their nature, as occasionally changes of colour, or other results, on the addition of the proper tests, indicate the constituents. If the analyst merely seeks a knowledge of the general *nature* of the substance under examination, he is satisfied when, by the application of certain tests, and by the performance of certain operations, he has obtained evidence of the presence of those elements of which the compound is made up, and the analysis is called a *qualitative* one; but if he desires to ascertain not only the nature but the actual *amount* of the elements present, he must separate the constituents of the compound completely from each other, and obtain them either pure, or in some well-known form of combination; he then appeals to the balance or measure, and the analysis he performs is called a *quantitative* one. The balance was formerly employed whenever great accuracy was required; but of late, methods of volumetric analysis have been brought to great perfection. By *volumetric analysis* is understood the measured bulk of test-liquids, containing known quantities, by weight, of certain substances capable of producing, with a solution of the assay, sufficiently marked effects to show with precision the complete conversion of the body sought to be estimated, into a compound, the nature of which is perfectly known. When the constituents of a body can be so reunit ed as to reproduce the substance which has been analysed, this process is called *chemical synthesis*, and is the best proof of the correctness of an analysis.—See "Chemistry" (elementary work), Bowman's "Practical Chemistry" (complete manual), Fresenius's "Chemical Analysis."

ANAMIRTA, *an-a-mir'-ta*, in Bot., a gen. of plants belonging to the nat. ord. *Melastomaceae*. The species *Anamirta paniculata*, or *coccinea*, is a beautiful climbing plant, which is a native of the Malabar

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coast and the Indian archipelago. Its fruit is poisonous, and is extensively employed by poachers for taking fish and game, and by dishonest publicans for adulterating malt liquors. (See *Cocculus Inquisitus*.)

ANANASSA., *an-a-nas'-sa*, in Bot., a gen. of plants belonging to the nat. ord. *Bromeliaceæ*. The species *A. sativa* furnishes the delicious fruit known as the pine-apple. A large number of pine-apples are now brought to England from the Bahamas Islands, but in flavour and lusciousness they are much inferior to those cultivated in hothouses. The fibres obtained from the thick leaves of the plant have been made into paper, cordage, and textile fabrics.

ANASARCA. (See *Diseases*.)

ANASTOMOSIS., *an-an-to-mo'-sis* [Gr. *ana*, through, and *stoma*, a mouth], a term used to denote the communication of the blood-vessels with each other. The necessity of a constant supply of blood to every part of the human body has led to a wise provision, by which, though even one of the larger arteries become obstructed, there are numerous smaller ones communicating with the same part, which, by the increased pressure upon them, become enlarged, and supply its place.

ANATOMY., *a-na-tom'-o-me*, is a term derived from the Greek verb *anatome*, I cut up, and properly signifies the separation of a thing into parts by cutting. All material substances either are or have been, or are not and have not been, possessed or endowed with life. The former have an organized structure, in which, in the living state, changes take place, and processes are carried on necessary to their existence. The latter are composed of homogeneous particles, and are subject only to mechanical or chemical changes. In the former are comprehended all plants and animals, in the latter all mineral and inorganic substances. It is to the former of these two great divisions that the term anatomy is applied. It is the art of dissecting organized bodies for the purpose of ascertaining their internal structure; it is also the science which deals with the knowledge thus acquired, and deduces general principles from it. As organized bodies naturally form themselves into two distinct classes—plants and animals, so we have *vegetable anatomy*, or the anatomy of plants, and *animal anatomy*, or the anatomy of animals. Animal anatomy, again, is subdivided into *comparative anatomy*, which treats of the structure of all animals except man, and *human anatomy*, which deals with the structure of man only. It is to this last that the general term of anatomy is usually applied. Human anatomy, or anatomy proper, then, treats of the several parts and organs of the human body, in respect to their form, structure, and relation to each other. It is usually divided into general, descriptive, and pathological. General

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Anatomy treats of the nature and general properties of the separate substances of which the body is composed, not as these exist combined in special organs, but as they form distinct and peculiar substances. *Descriptive anatomy* comprehends a description of the several parts and organs of the body, with an account of their situation, connections, and relations, as existing in the natural and healthy state. *Pathological*, or *morbid anatomy*, traces and describes the changes produced by disease upon healthy structures, whether existing in individual organs, or in the primitive or common substances of which these organs are composed. As an account of the various parts and organs of the human body, as well as of the diseases to which they are subject, will be found under their several names, in other parts of this work, it is unnecessary to do more here than give a short summary of the subject, referring to those articles for more particular information.

General Anatomy.—The human body consists of fluid and solid substances, the fluid bearing to the solid parts a general ratio of from 7 to 1 to 9 to 1. The fluids of the body are various, but may be divided into three classes:—the circulating nutritious fluid called the blood; the fluids which are incessantly poured into it for its renewal, viz. the chyle and lymph; and the fluids which are separated from it by secretion, as saliva, bile, gastric juice, &c. The blood is that well-known red fluid which, by means of the heart, arteries, and veins, circulates through all parts of the system, and supplies the waste that is constantly going on. The chyle is a milky fluid, separated from the chyme or digested food after it has passed from the stomach into the small intestines, and become mixed with the bile and pancreatic juice. It is absorbed by the lacteals, and conveyed by ducts or canals to the receptaculum chyl, where it is taken up by the lymphatic vessels, which pervade almost every part of the body. It seems to differ little from chyle, except that the latter contains a greater preponderance of fatty matter. The greater portion of the lymph is poured into the receptaculum chyl, where it becomes mixed with the chyle, and is carried with it into the blood; that, however, collected from the right side of the head and chest, and right upper limb, is conducted into the right subclavian vein, by the right lymphatic or right thoracic duct. The secretions are those fluids secreted or separated from the blood. The term is sometimes used to include the excretions which are thrown off from the body as useless or noxious, as urine from the bladder, perspiration from the skin; but it is properly applied only to such products as are secreted from the blood, but still retained in the system for the performance of certain subordinate actions. These are:—. Saliva,

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secreted by the salivary glands of the mouth.
2. Gastric juice, by the stomach. 3. Pancreatic juice, by the pancreas. 4. Bile, by the liver. 5. Tears, by the lacrimal gland. 6. Milk, by the mammary glands. 7. Semen, by the testes. 8. Oil, by the vessels of the adipose tissue. 9. Synovia, by the synovial glands of the joints; and 10. Mucus, by the mucous glands.

The organized solids of the human body are usually divided into the following seventeen elementary tissues:—1. Bone, or osseous tissue, which forms the framework of the body, to which the other structures are attached, or in which they are contained. 2. Muscular tissue, consisting of fine fibres, which are for the most part collected into distinct organs called muscles, by means of which the active movements of the body are performed. 3. Adipose tissue, which constitutes the fat of the body as well as the marrow of the bones. 4. Areolar, cellular, or connective tissue, a soft filamentous substance of considerable tenacity and elasticity, which is extensively distributed over the body, and forms the connecting medium of all the other tissues. 5. Fibrous tissue, formed of a number of minute fibres running chiefly parallel to each other, and sparingly supplied with blood-vessels or nerves, and used for connecting, enveloping, or binding together various parts of the body, as tendons, ligaments, fascia, periosteum, perichondrium, dura mater. 6. Elastic, or yellow tissue, characterized by possessing a high degree of elasticity, and employed wherever that quality is required, as in forming the spinal ligamenta subclava. 7. Cartilage, an opaque substance, usually of a pearly or bluish-white colour, but sometimes yellow, covering the articular extremities of the bones, connecting the surfaces or margins of movable bones, or lining the walls of certain cavities, also found in the ear, nose, larynx, &c. Fibro-cartilage, as its name indicates, a structure intermediate between fibrous tissue and cartilage, partaking, in some measure, of the firmness of the one with the elasticity of the other. 8. Nervous tissue which goes to form the nervous system. 9. Blood-vessels, comprising the arteries by which the blood is conducted from the heart to all parts of the body; the veins, by which it is brought back again to the heart; and the capillaries, minute vessels by which it is carried from the extremities of the one to those of the other. 10. Absorbent vessels and glands comprising the lacteals and lymphatics, together with the glands in connection with them. 11. Berois and synovial membranes, which resemble each other in general form and structure, but are distinguished by the nature of their secretions, the former lining the cavities of the body which have no outlet, as the peritoneum in the abdomen, the pleura and pericardium in the chest, and

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secreting a transparent and nearly colourless fluid, which moistens the surface, the latter lining the cavities of the joints, and secreting a viscid fluid which lubricates their surface. 12. Mucous membrane, which lines those internal passages of the body exposed directly or indirectly to contact with the atmosphere, and secretes a viscid fluid of a more consistent and tenacious character than the serous membranes. 13. Secreting glands, a class of organs widely differing from each other in their nature and form, but all devoted to the function of secretion. 14. Vascular or ductless glands, so called from their general resemblance to secreting glands, but differing from them in having no duct for the conveyance of their secretions, which are re-absorbed or filtered through the tissue, or find an outlet by bursting. 15. Skin,—cutis vera, derma, or corium, the innermost of the three structures that go to make up what is commonly termed the skin, and which covers the whole body. 16. Pigment, a black, or dark-coloured substance, occurring in various parts of the body, and giving colour to the skin of the negro and other dark races. 17. Epithelium, a thin, transparent structure, covering the whole surface of the body, as well as the walls of the different cavities, and named differently, according to the parts which it covers; as, epidermis, covering the skin, the epithelium of mucous membranes, &c.

Descriptive or Special Anatomy is commonly divided into several branches, according as it regards: (1) the bones (*Osteology*); (2) the articulations; (3) the muscles (*Mysiology*); (4) the blood-vessels and absorbents (*Angiology*); (5) the nervous system (*Neurology*); (6) the organs of sensation, respiration, digestion, &c. (*Splanchnology*).

Osteology.—The number of bones in the human body is variable; but in the adult they are reckoned at about 244. They are usually divided into long, flat, and irregular:—long, as in the thigh and leg; flat, as in the skull and pelvis; irregular, as in the hands and feet. Bones are covered with a peculiar membrane, called the periosteum, which serves to conduct the blood-vessels and nerves. The osseous skeleton is divided into head, trunk, upper and lower extremities. The head comprises the bones of the cranium and those of the face, including three common to both. The bones of the cranium are eight in number—the frontal, in the fore part of the skull; the two parietal, forming a portion of its sides and all its superior part; the occipital, forming its lower and back part; the two temporal, forming the lower part of the sides and part of the base; the sphenoid, in the middle of the base; and the ethmoid, in the middle of the fore part of the base. The bones of the face are fourteen in number:—the ossa naso, which form the arch of the nose; the ossa lacrymalia, at the fore part of the inner edge

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of the ocular orbits, the malar bones, forming the prominences of the cheeks; the upper maxillary bones, forming the upper jaw, and containing the upper teeth, the osa palati, situated at the posterior part of the palate, the nose, and the orbits, the vomer, a flat bone, forming part of the septum of the nose, the osa turbinata interna, and the lower maxillary bones, forming the lower jaw, and containing the under teeth. There are thirty-two teeth, sixteen in each jaw, viz., four incisors, or front teeth, two cuspids, or canines, four bicuspids, and six molars. The last molar on each side is called the *dens sapientia*, or wisdom tooth, from not appearing till about the age of twenty-one. The os hyoides, or hyoid bone, is placed in the anterior and upper part of the neck, and has no osseous connection with any other bone. The trunk is divided into the spine, thorax, and pelvis. The spine is a pyramidal column extending from the head to the pelvis, and is composed of twenty-four bones, termed vertebrae. Each vertebra consists of a body and seven processes, and has a foramen, or ring, through which the spinal cord passes. They are divided into three classes—the cervical, including the first seven, the dorsal consisting of twelve, which are larger than the cervical, and are distinguished by having their sides and transverse processes depressed for connection with the ribs, and the lumbar, consisting of five, which are larger than any other. The first two cervical vertebrae differ from the others, and are known as the atlas and the axis, or Vertebra dentata. There are likewise five so-called false vertebrae, on account of their being separate in early life, but afterwards uniting to form the os sacrum, which constitutes the posterior part of the pelvis. The thorax, which contains the principal organs of circulation and respiration, is the largest of the three great cavities connected with the spine, and is formed by the sternum and costal cartilages in front, the twelve ribs on each side, and the dorsal vertebrae behind. The sternum is a flat narrow bone, situated in the anterior part of the thorax, and connected with the ribs by means of the costal cartilages. The ribs are twenty-four in number, twelve on each side, of which the first seven are termed vertebro-sternal, or true ribs, and are attached to the sternum, three are attached to the costal cartilages, and are called vertebro-costal, and two are termed vertebral or floating ribs, from their anterior extremities being free. The pelvis, or lower cavity of the trunk, consists of four bones; the os sacrum and os coccygis behind, and the two osa innominantes on either side. The os coccygis, which forms the terminal bone of the spine, is sometimes regarded, like the os sacrum, as composed of four false vertebrae, which are at first distinct, but afterwards become united. The

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ossa innominata are two irregularly-shaped bones, situated one on each side of the pelvis, and consisting of three parts, the ilium, ischium, and pubis, firmly united in the adult, but distinct in the young subject. Each of the two upper extremities is composed of the bones of the arm, the forearm, and the hand, and is united to the trunk by means of the scapula and clavicle, which form the shoulder. The scapula is a flat triangular-shaped bone, placed upon the upper and back part of the thorax. The clavicle, or collar bone, is a long bone, something in the form of the italic letter *L*, and situated between the top of the sternum and the acromion process of the scapula. The arm has only one bone, the os humeri, which extends from the scapula to the bones of the forearm. The forearm consists of two bones, the radius and ulna, which are parallel, and play upon each other, thus admitting of free motion in that part. The radius, so called from its resemblance to the spoke of a wheel, is situated on the outer side of the forearm. Its upper end is small, and forms only a small part of the elbow joint, while its lower extremity is large, and forms the chief part of the wrist joint. The ulna is placed at the inner side of the forearm, and differs from the radius in being larger at the upper than at the lower extremity. The bones of the hand are divided into the carpus, the metacarpus, and phalanges. The bones of the carpus, or wrist, are eight small bones, arranged in two rows, the upper row comprising the scaphoid, semi-lunar, cuneiform, and pisiform; the lower, the trapezium, trapezoid, os magnum, and unciform. The metacarpal bones, or bones of the palm, are five in number, and correspond to the fingers. The phalanges, or bones of the fingers, are fourteen in number, each finger, with the exception of the thumb (which has only two) having three of them. The upper and lower extremities bear a great resemblance to each other in the nature and form of their bones. Like the upper, each of the lower extremities consists of three distinct parts—the thigh, leg, and foot. The thigh is composed of a single bone, the os femur, which is the longest and largest in the body. The upper part forms a round head, which is inserted into a deep cup-like cavity of the os innominatum, called the acetabulum; the lower terminates in two protuberances, known as the inner and outer condyles, separated posteriorly by a deep fossa, called the inter-condyloid. The leg consists of three bones; the patella, tibia, and fibula. The patella, or knee-pain, is a small, flat, triangular bone, of a spongy texture, situated at the anterior part of the knee-joint, between the femur and the tibia. The tibia and fibula in the leg resemble the radius and the ulna in the forearm, the tibia is, after the femur, the largest bone in the body. It is situated at the anterior and inner

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sides of the leg, articulating with the femur above and the tibia below. The fibula is considerably smaller than the tibia. Its upper extremity is small, and placed below the level of the knee joint, but the lower extremity projects below the tibia, and forms the outer ankle. The foot like the hand is composed of three classes of bones—the tarsus, the metatarsus, and the phalanges. The tarsus is composed of seven bones—the os calcis, astragalus, cuboid, scaphoid, and three cuneiform. The metatarsal bones are long small bones five in number, connected at the one extremity with the tarsal, at the other with the phalangeal bones; these last go to form the toes each of which has three, except the great toe which has only two.

Articulations.—The different bones of the skeleton are connected together in various ways, and such connections are termed articulations. They are of various kinds, but are usually divided into immovable, movable and mixed. Immovable articulations exist where flat and broad bones are united to in close important organs as in the cranium and pelvis. In some parts the edges indent or interlock each other in others they are brought into close contact or are united together by a thin layer of cartilage. The movable articulations are of various kinds according to the kind of motion required. In such cases, the bony surfaces brought into contact are covered with cartilage bound together by ligaments, and lined by synovial membrane. Mixed articulation prevails where only a slight degree of motion is required, combined with great strength as in the vertebrae. The bones of the head and face are connected together by immovable articulation, except the inferior maxillary the condyle of which articulates with the anterior part of the glenoid cavity of the temporal bone and the anterior root of the zygoma. The different vertebrae of the spine are connected together by ligaments and the inter-vertebral substance, the latter a fibro-cartilaginous, slightly elastic substance interposed between the adjacent surfaces of the different vertebrae, from the axis to the sacrum, and forming the chief bond of connection between the bones. It varies in shape, size and thickness, in different parts of the spine. The articulations of the first and second vertebrae are different and much more complicated than the others, in order to admit of the various movements of the head. In the articulations of the ribs to the vertebrae, the heads of the ribs are connected with the bodies of the vertebrae by one set of ligaments, and the necks and tubercles of the former with the processes of the latter by another set, admitting of a limited upward and downward motion, and a very slight motion backwards and forwards. The cartilaginous articulation of the ribs with the sternum admits only of a very slight motion upwards

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and downwards. In the pelvis, the articulation of the sacrum with the last of the true vertebrae, and of the coccyx with the sacrum, are similar to that of the vertebrae with each other. The lateral surfaces of the sacrum and ilium articulate with each other by means of an irregular lamella of cartilaginous structure and several sets of ligaments. The sacrum is also connected with the ischium by two ligaments, known as the great sacro-acetabular and lesser sacro-acetabular. The two pubic portions of the osa innomina articulate in front by means of an elongated piece of cartilage interposed between the osseous surfaces, and connected with each the union being strengthened by ligaments. In the upper extremity the sterno-clavicular articulation is formed by the sternal end of the clavicle, the upper and lateral part of the head of the sternum, and the cartilage of the first rib. The motion here is in almost every direction—upwards, downwards, backward, forward, as well as circumductive. The scapulo-clavicular articulation is formed between the outer extremity of the clavicle and the upper edge of the acromion process of the scapula, and the movements are gliding and rotatory. At the shoulder is what is called a ball and socket joint the large globular head of the humerus being inserted into the glenoid cavity of the scapula, and admitting extensive motion in almost every direction. The hinge joint at the elbow is formed by the lower extremity of the humerus and the upper extremities of the radius and ulna and allows extension and flexion movements. The rotatory movements of the forearm arise from the connection of the radius and ulna at the upper extremity the inner side of the head of the radius rotates within the lesser sigmoid cavity of the ulna, at the lower, the head of the ulna rotates upon the sigmoid cavity at the inner side of the radius while the middle portions of the two bones are connected by two ligaments, forming what is termed the middle radio-ulnar articulation. The wrist joint is formed by the radius and the inner articular, fibrocartilage, which separates it from the ulna and the three first bones of the carpus, and admits of flexion, extension, abduction, adduction, and circumduction. The bones of the carpus are united by special ligaments so as to form two rows, and the rows are connected together by ligaments so as to form a joint. The articulations of the carpal with the metacarpal bones admit only of a slight gliding motion of the different surfaces upon each other, except in the case of the thumb, where it is much more varied. The carpal extremities of the last four metacarpal bones articulate with one another at each side, and are bound together by ligaments to form the palm of the hand. The articulations of the metacarpal bone with

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the phalanges, and of the phalanges with each other, form hinge-joints. In the lower extremity, the head of the femur is received into the acetabulum, or cup-shaped cavity of the os innominatum, and connected by strong ligaments to form the hip-joint. The knee-joint is formed by the lower extremity of the femur articulating with the head of the tibia and the patella, and give flexion and extension with a slight rotary motion. The tibia and fibula are connected together, like the radius and ulna, by various ligaments, and their upper and lower extremities brought into contact, and have a slight gliding motion upon each other. The ankle-joint is formed by the inferior extremities of the tibia and the fibula, united so as to form an arch, into which the superior convex surface of the astragalus is received, and allows of flexion and extension. The articulations of the tarsal, metatarsal, and phalangeal bones do not differ materially from those of the hand, except that their ligaments are generally stronger, and admit of less motion.

Muscles—The muscles, with their appendages, the fasciae and tendons, constitute the active organs of motion. They serve also to protect the walls of large cavities, and to give form and symmetry to the whole body. Muscular tissue is of two kinds, distinguished by structural peculiarities and mode of action. The one class comprises the muscles of voluntary or animal life, the other of involuntary or organic life. The muscles of animal life, or striped muscles, are all those that are capable of being excited or controlled by the will, and include not only the voluntary muscles, but all the muscles of the ear, those of the larynx, pharynx, tongue, and upper half of the oesophagus, the heart, and the walls of the large vessels, at the point where they open into it. The muscles of organic life, or unstriped muscles, form the muscular coat of the digestive canal from the middle of the oesophagus to the internal sphincter ani, of the urinary bladder, the trachea and bronchi, the ducts of glands, the gall-bladder, arteries, &c. The muscles are named from their situation, direction, use, shape, or points of attachment, as, tibialis, obliquus capitis, adductor longus, deltoid, sternohyoid. In the human body there are sixty-six muscles at each side of the head and neck, ninety at each side of the trunk, and two single ones, fifty-three in each of the upper extremities, and fifty-six in each of the lower. The limits of the present article preclude our attempting to give details of the situation, relations, &c., of this numerous class of organs, which, besides, would have little interest for the general reader.

Anæiology—The blood-vessels of the human body are the heart, arteries, veins, and capillaries. The heart is a muscular organ, lying obliquely beneath and behind

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the sternum, with its tip pointing downwards, forwards, and towards the left. It is divided by a longitudinal septum into a right and left half; the former contains the venous, the latter arterial blood, and each half is again subdivided into two portions communicating with each other, the upper being termed the atriole, the lower the ventricle. From the right ventricle, the blood is sent, by means of the pulmonary arteries, to the lungs, whence it is returned by the pulmonary veins into the left atriole, passes into the left ventricle, and is thence conveyed by the aorta to every part of the body. The aorta, commencing at the left ventricle, ascends for a short distance, then arches over the root of the left lung, descends along the vertebral column within the thorax, passes through the diaphragm into the abdomen, and divides, opposite the fourth lumbar vertebra, into the right and left common iliac arteries. These last subsequently divide into two branches, named the internal and external iliac arteries, the former being distributed to the walls and viscera of the pelvis, the latter proceeding to the lower limbs, after sending two important branches to the walls of the abdomen. The branches sent off from the arch of the aorta are five in number,—the two coronary arteries which supply the heart; the innominate artery, dividing afterwards into the right carotid and subclavian arteries, the left carotid and the left subclavian. Each of the carotids afterwards separates into the external and internal carotid, the former being distributed to the external parts of the head and face, the latter to the internal parts of the cranium. The subclavian artery supplies the upper extremity, giving off, as branches, the vertebral, the internal mammary, thyrocervical, and the superior intercostal arteries. From the thoracic portion of the aorta, numerous branches are given off, chiefly of small size, and known as the pericardial, bronchial, oesophageal, posterior mediastinal, and intercostal arteries. The abdominal aorta gives off numerous branches, which may be divided into two sets,—those which supply the viscera, and those which are distributed to the walls of the abdomen, the former comprising the coeliac artery (which shortly divides into the gastric, hepatic, and splenic arteries), the superior mesenteric, the inferior mesenteric, the epigastric, the renal, and the spermatic arteries, the latter, the phrenic, lumbar, and median sacral arteries. The veins which return the blood from the capillaries to the heart are of two kinds,—the pulmonary, conveying arterial blood from the lungs to the left atriole of the heart, and the systemic, carrying venous blood from all parts of the system back to the right atriole of the heart. The pulmonary veins are four in number, two for each lung, and differ from other veins in being

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dentate of valves. The systemic veins are usually arranged into three groups, according to their mode of termination in the heart:—1. Those of the head, neck, thorax, and upper extremities, which terminate in the superior vena cava. 2. Those of the abdomen, pelvis, and lower extremities, which terminate in the inferior vena cava. And 3. The cardiac veins, returning the blood from the substance of the heart, and opening directly into the right auricle. The veins, in their general form and distribution, correspond to the arteries. The vena cava superior is a short trunk formed by the junction of the two veins innominate, and terminating in the upper part of the right auricle. The vena cava inferior is formed by the junction of the two common iliac veins between the fourth and fifth lumbar vertebrae, and terminates in the lower and back part of the right auricle. The capillaries [from *capilla*, a hair] are minute vessels pervading every part of the body, and uniting the extreme points of the arteries with those of the veins. Their diameter varies in different parts, but is usually about $\frac{1}{16}$ part of an inch. For an account of the absorbent system, see LACTEAL and LYMPHATICS.

The nervous system consists of two parts, known as the cerebro-spinal and the sympathetic or ganglionic systems. The former includes the brain and spinal cord, with the nerves proceeding from them, and is regarded as the nervous system of animal life; the latter consists of a double chain of ganglia, running along the spinal column, whose functions seem to be less directly connected with the mind, and chiefly bearing upon the animal life. The cerebro-spinal system is divided into the encephalon, or portion contained within the cranium, and the spinal cord, inclosed within the vertebral canal. The encephalon comprises the cerebrum, the cerebellum, the pons Varolii, and the medulla oblongata, and is covered with three membranes, called the dura mater (or outermost), the arachnoid membrane, and the pia mater. The substance of the encephalon is of two kinds,—a cincititious or greyish substance, called also cortex, from forming the outer part of the cerebrum and cerebellum; and a white or medullary matter, forming the inner substance of the cerebrum and cerebellum, but the outer of the medulla oblongata and pons Varolii. The cerebrum, or brain proper, forms by far the largest portion of the encephalic mass. Its upper surface is divided into a right and left hemisphere, by a longitudinal fissure lodging the falk cerebri. The under surface of each hemisphere is marked off into three lobes, called the anterior, middle, and posterior. The entire surface of each hemisphere presents a number of convoluted eminences, separated from each other by depressions of various depths.

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The cerebellum, or little brain, is situate beneath the hinder part of the cerebrum, from which it is separated by the tentorium cerebelli. It is likewise divided into two lateral hemispheres; but its surface is not convoluted, but laminated. It is connected with the rest of the encephalic masses by means of connecting bands, called crura or peduncles, two of which ascend to the cerebrum, two descend to the medulla oblongata, and two unite in front to form the pons Varolii. This last occupies a central position on the under surface of the encephalon, and constitutes the bond of union between the other parts, being connected above by crura from the cerebrum, at each side by crura from the cerebellum, and being in contact below with the medulla oblongata. This last extends from the lower border of the pons Varolii to the upper part of the spinal cord. It is pyramidal in form, with its broad extremity directed upwards, and measures about an inch and a quarter in length. By means of two fissures, it is divided into two lateral and symmetrical halves. The spinal cord is situate within the vertebral canal, and extends from the foramen magnum of the occipital bone to the first or second lumbar vertebra, where it terminates in the cauda equina, an aggregation of nervous cords occupying the remainder of the canal. The spinal cord, like the encephalon, is inclosed by the three membranes,—the dura mater, arachnoid, and pia mater. It is composed of white and grey matter, the former external, the latter internal. The grey substance is found, on making section, to be arranged in a cross-tentorial shape in each hemisphere of the cord, the posterior cornua being much longer than the anterior. From the spinal cord spring thirty-one pairs of spinal nerves, corresponding to the number of true and false vertebrae, between which they issue, except that there are eight pairs of cervical nerves and one coccygeal. Each spinal nerve arises by two roots,—an anterior or motor, and a posterior or sensitive. These approach one another, and, with few exceptions, unite in the corresponding inter-vertebral foramen into a single cord, which almost immediately divides into two branches, one of which proceeds to the muscles, &c., of the back, the other to the anterior parts of the body. Besides the spinal nerves, there are nine pairs of nerves that issue from the encephalon to different parts of the head and face. They are connected with the organs of seeing, hearing, taste, smell, &c., and are hence named optic, auditory, olfactory, &c. They are also distinguished numerically, as first, second, third, &c., according to the part of the brain from which they spring. The sympathetic or ganglionic nervous system is composed of a series of ganglia, or nervous centres, extending along the spinal column from the base of the skull to

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the coccyx, connected with each other by filaments, and also communicating in various parts with the cerebro-spinal system. They are regarded as the nerves of organic life, and principally supply the various viscera and blood-vessels (See Nervous System.)

Splenatology — Regarding the anatomy of the various organs of sensation, respiration, digestion, &c., we must refer to the accounts given under their proper names, in other parts of this work.

History — Some knowledge of the internal structure of the human body was doubtless obtained at a very early period. The ancient Egyptians are said to have acquired great anatomical skill from their practice of embalming, and Homer displays a considerable amount of knowledge of the human body in his description of wounds, in the "Iliad." Hippocrates, who flourished about 400 years B.C., is regarded as the first author who treated anatomy as a science. Iasistratus and Herophilus of Alexandria are considered as the first who dissected and described the human body nearly 300 years B.C. Galen, however (born 131 A.D.), is the author of antiquity that displays the most intimate knowledge of the human body and even he evidently obtained a great part of his knowledge from dissections of apes and other animals, there being a law in Rome which forbade the use of dead bodies. During the dark ages, anatomy like other sciences made little progress. The interest in anatomy began to revive about the 13th century and in the beginning of the 14th Mundinus dissected and demonstrated the different parts of the human body at the university of Bologna and published a work which formed the text book in Italy for nearly 200 years. During the next 200 years the interest in anatomy continued to increase, and, within that period, there are several respectable names in connection with it, as Gabriel de Zerbo, Achillini, Berger, and Massa. The errors of Galen, however, still prevailed till the time of Vesalius, who flourished about the middle of the 16th century, and boldly, by dissections of the human body pointed out the errors into which he had fallen. He is regarded as the father of modern anatomy. His great work, *De Corporis Humani Fabrica* was published before he was twenty eight years of age. He gave a great impulse to human dissection, and, among his contemporaries, or immediate successors, were Fallopius, Bustachini, Varoli, and Fabricius. In the 17th century the progress of anatomy was rapid. In 1656 Harvey's great discovery of the circulation of the blood was announced. Asellius, in 1627, gave out his discovery of the lacteals; and in 1651 Rudbeck discovered the lymphatics. Among the other distinguished anatomists of this century were, Bartholin, Pecquet, Jolyffe,

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Wharton, Swammerdam, Willis, Maelzel, and Bayle. In the 18th century we have many eminent names. In Italy, who still retained a first place, were Vascovi, Sestini, and Morgagni; in France, Winslow, Ving d'Aix, and Bichat (the founder of General Anatomy); in Germany, Kuhler, Meckel, Zinn, and Stommering, in Holland, Boerhaave, Albinus, Camper, and Bonn, and in England, Cheseidien, the two Hunter, Charles Bell, and the Monroes, of Edinburgh. The present century has been specially characterized by the great advance made in minute or microscopic anatomy. Among the names of this period may be mentioned Cloquet, Magendie, Müller, Quain, Goodar, Bowman, Todd, Sharpey, Ellis, Wilson, Gray, and Holden — See Quain's "Anatomy," Gray's "Anatomy," Holden's "Human Osteology," Wilson's "Anatomist's Vade Mecum."

Ankylosis, *an'ki-lo'sis* [Gr. *agnēlos*, I bind] a term used to denote an immovable or fixed state of a joint. This condition may attack any joint of the body, and instances have been known of the whole body thus becoming ankylosed. In complete or true ankylosis, no motion whatever takes place, the heads of the bones being connected together by osseous or bony matter. In incomplete or false ankylosis, the immobility arises from adhesion of the synovial membrane or a thickening of the parts about the joint, and usually admits of some degree of motion. Ankylosis frequently occurs after sprains, dislocations, or fractures in a joint, and, indeed, may be occasioned by anything that keeps a joint long motionless. In order to prevent ankylosis, the joint is to be exercised as much as the state of the surrounding parts will admit, if it cannot be prevented, the joint is to be kept in the most convenient and natural position. Ankylosis is sometimes very desirable as a termination of painful diseases of the joints.

Anconfinus, *an'ko'ne us* (*akōros*, the elbow). Anat. a small triangular muscle, situated immediately beneath and behind the elbow joint. It is connected with the humerus above and the ulna below, and assists in extending the forearm.

ANDRA, *an'dra*, in Bot., a gen. of plants, belonging to the nat ord Leguminosae, subord Papilionaceæ, characterized by a one-seeded one-seeded pod, almost orbicular. The species *A. variegata* is a native of the West Indies, and is commonly known as the Cabbage-bark tree. The bark called either cabbage-bark or worm-bark in commerce, was formerly much used medicinally as an anthelmintic (see this word). It possesses cathartic, emetic, and narcotic properties. In large doses it is poisonous. The species *A. vesica*, a native of Surinam, yields a bark with similar properties, which is commonly known as Surinam bark.

Amorphocean, *a-mor'fo-sen* (Gr. *asei*,

Androsemum.

*thus, pogon, beard), in Bot., a gen. of grasses, of nat. ord. Gramineae. A tufted root, thought to resemble a man's beard, is one of the characters of the genus, hence its botanical name. Many species are remarkable for their fragrance, which is due to the presence of volatile oils, some of which are used in perfumery and medicine. The leaves of the *A. cicutaria*, or Indian lemon grass, have been used as a sal. tinctura for tea, and the centre of the stem is employed for flavoring curries. *A. mur. latus*, vittadiney, or cuscus, also yields a fragrant oil, which is much used medicinally in India, and there known as khusus oil. Its root has also been employed medicinally as a gentle stimulant and antispasmodic.*

Androsemum, *an dro' se um*, in Bot., a gen. of plants belonging to the nat. ord. Hypoxidaceae. The species *A. officinalis* has tonic and astringent properties, which render it useful in medicine.

Aneratum, *a'ne-thum* [Lat. *aneratum*, dill, anise] a gen. of plants belonging to the nat. ord. Umbelliferae. The species *A. graveolens* is commonly known as the Dill. The fruits, improperly termed seeds, of this plant are imported into this country in large quantities every year from the south of France. They have carminative properties, due to the presence of an essential oil, contained chiefly in the *viscera* of the pericarp. They are used in medicine and it is said, in the manufacture of London gin. The plant is also cultivated in this country.

Aneurism, *a'ne-u-rizm* [Gr. *aneuro uno*, I widen or dilate], in Surg., is generally defined to be a pulsating tumour, containing blood, and communicating with the interior of an artery. It is a tumour formed by a spontaneous dilation of a part of an artery, or by the extravasation of arterial blood in the cellular membrane, in consequence of a rupture or wound of the coats of an artery. The former is termed true, the latter false or spurious aneurism. If the two inner coats of an artery are ruptured, and a sac is formed by the outer, it is called a mixed aneurism. Aneurisms arise partly from too violent motion of the blood, partly from preternatural weakness in the membranes of the artery. They are most frequent in the adult, between the ages of thirty and fifty, and occur oftener in the male than in the female, but no age is wholly exempt from them. They may be met with in any part of the body, and are usually divided into external and internal, the former occurring on the limbs, neck or external part of the head, the latter forming in any of the cavities of the body, as the thorax or abdomen, and generally affecting the aorta or some of its principal branches. In the early stage of aneurism, if external, a small pulsating tumour is observed, which entirely disappears when compressed, but returns as soon as the pressure is removed. It continues to grow

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larger, and as it increases in size its pulsations become weaker, partly on account of its greater distance from the course of the blood, and sometimes also from the accumulation of fibrine within in the cyst. Sometimes this fibrine consolidates, and becomes connected with the walls of the cavity, which it at length fills up occasionally bulging into and choking up the artery. This however, is a termination of aneurism that is unfortunately rare. In most cases, the dilation of the sac goes on until, if not arrested, the inclosing membranes give way, and the patient expires from loss of blood, or death may be produced by pressure upon important parts, as the trachea, oesophagus, nerves &c. The cure of aneurism consists in applying a ligature to the artery above the tumour, the ingress of blood into the sac is thus prevented, and its contents are gradually absorbed. The blood, being interrupted in its course through the artery, passes with greater force into the collateral branches, permanently enlarging them, and thus the necessary circulation to the parts beyond the obstruction is carried on. In intramural aneurisms not admitting of such treatment, recourse must be had to such means as moderate the action of the heart, and depress the general circulation, thus inducing the formation of fibrine within the sac, which may gradually fill it up. These consist of repeated bleedings, low diet, perfect rest, and the administration of gentle laxatives and medicines which moderate the action of the heart, as digitalis, &c.

Angelica, in Bot. (See ARACHNEGLICA.)

America Tree (See AZALIA.)

Angina Pectoris, *a'ngi-nah pek-to'ris*, literally signifies a contraction or tightening of the chest, and in Med. is the name of a disease of the chest, characterized by a feeling of painful constriction at the lower part of the sternum, or breastbone, including to the left side, and extending to the left arm. The pain is very acute, accompanied with a difficulty of breathing, irregular action of the heart, and a feeling of approaching dissolution. The paroxysms last from a few minutes to half an hour or more, and come on suddenly, at irregular intervals. They are often excited by violent exercise, strong mental emotion, or a derangement of the digestive organs, but frequently manifest their appearance without any manifest exciting cause. It is met with chiefly in the middle aged or old, and is more frequent in males than females. Physicians are by no means agreed as to the seat and nature of this disease, and dissection has shown almost every disease of the thoracic viscera in connection with it. The general opinion, however, seems to be that it is owing to some important organic disease of the heart, which impairs its functional activity, such as fatty degeneration of its muscular fibres, which in very many cases has

Angustura Bark.

been found to be present. It is the nature of this disease to proceed from bad to worse, until at last the patient expires during a paroxysm of more than usual severity or duration, or falls a victim to some of the many organic lesions of the heart with which it is so often attended. Where the patient is young, or of good constitution, and where there are no symptoms of organic affection, success frequently attends early, active, and judicious treatment. Violent exercise and strong mental emotions are to be avoided, as well as long fasting or too full meals, and sudden exposure to great heat or cold. In fact, the patient must lead a sober, quiet, and temperate life, in which neither the emotions of the soul are to disturb the functions of the body, nor corporeal affections are allowed to disturb the serenity of the mind." The treatment during a paroxysm consists in the administration of stimulants—as wine, brandy, and ammonia; and of anti-spasmodics—as opium, ether, chloroform, chloral. Otherwise the general health is to be improved by means of tonics, attention to diet, and the state of the bowels.

ANGUSTURA BARK, or CUSPARIA BARK, *an-gus-tu'-ra*, a valuable drug, imported directly or indirectly from South America. In small doses it acts as a stimulant, tonic, and febrifuge; while, in large doses, it is somewhat emetic and purgative. This bark is the produce of different species of *Galipea* (which see), and its characteristic properties depend on the presence of an active principle, to which the name *Cusparin* has been given. The powder is given in doses of 10 to 30 grains.

ANHYDROUS. *an-hi'-drus*.—Oxides and salts containing no water are said to be anhydrous. Water possesses the property of forming compounds called hydrates, with different salts and oxides. Thus we have hydrate of potassa, of lime, of oxide of chromium, &c. The affinity possessed by many metallic oxides for water is so strong that, when once the hydrate is formed, the water cannot be separated but by the addition of an acid. Caustic potassa, for instance, contains one atom of water which is not separated even by a red heat.

ANIMAL CHEMISTRY. — That branch of science which treats of the different changes going on in the living animal; such as the change of the egg, consisting of white, yolk, and shell, into the flesh, blood, bone, and feathers of the young bird. The processes of respiration, digestion, and assimilation of food, are purely chemical operations. The principal chemical substances necessary for the support of the different functions of the animal system, are oxygen, hydrogen, carbon, nitrogen, sulphur, phosphorus, and chlorine, and the metals iron, sodium, potassium, lime, and magnesia. These are all received into the system in the form of

Animal Heat.

food, and become distributed to the different parts of the body during the process of digestion and assimilation; as, for example, the iron to the blood and hair, the lime and phosphorus to the nails and bones. If any of these substances are wanting, the system suffers, and they must be restored to the patient. For instance, rachitis, or rickets, in children is caused by the bone containing too little lime; and the best remedy, therefore, in its earliest stage, is plenty of lime-water, or some other substance containing lime. The following analysis of different parts of the human system will be interesting, as showing the destination of these different substances:—

	BONE.	HAIR.
Animal matter	31	Carbon 5 ^r
Phosphate of lime	59	Hydrogen 7
Fluoride of calcium	2	Nitrogen 17
Carbonate of lime	7	Sulphur 3
Phosphate of magnesia	1	Oxygen 21
		FLESH.
BLOOD.		
Water	779	Coagulated fibre.
Fibre	2	Water, three-fourths.
Fatty matter	2	Albumen.
Albumen	69	Phosphoric acid.
Iron and salts	7	Phosphates.
Blood corpuscles	141	Chlorides.

The modern discoveries of animal chemistry have thrown great light upon the vital functions, and the laws governing them, and have purged medical science of much of the rubbish in which it was previously involved. (See BLOOD, BONES, EXCRETION, &c.)

ANIMAL HEAT is that heat which is generated in the bodies of living animals, by which they are enabled to maintain a certain temperature, independent of that of the atmosphere or other medium by which they are surrounded. Heat is one of the conditions necessary to life, and, when that is reduced below a certain point, all vital activity ceases. The sun is the great source of heat, and on it vegetables and the greater number of tribes of animals principally depend. There are certain tribes of animals, however, especially birds and mammals, which possess the power of generating heat within themselves to such a degree as to render their vital functions almost entirely independent of external influences; and there is probably no species that can exercise this power more effectually and through a greater range of conditions than man. Judging merely from our sensations, we should be led to conclude that our bodies undergo very considerable changes of temperature. Such, however, has been proved not to be the case. From a series of 114 observations made by Dr. John Davy on persons of dif-

Animal Heat.

different ages and sexes, and in various latitudes, it was found that the mean temperature of the body was 100° in a mean atmospheric temperature of 74° ; the highest temperature of the body being 102° , while the highest atmospheric temperature was 82° , and the lowest temperature of the body 96.5° , while the lowest temperature of the air was 60° . The mean age of all the individuals was 27 . In favourable circumstances, the temperature of infants is somewhat higher than that of adults; but, in their power of resisting the depressing influence of external cold, the former are much inferior to the latter. External cold reduces the temperature of the body considerably, especially if at rest. Thus Dr. Davy found the temperature of his own body reduced, on an average of four observations, to 96.7° , with the average temperature of the surrounding air at 37° . An increase of temperature takes place after exercise, as well as after a meal. The usual temperature of the body occasionally undergoes considerable change in disease, from 106° in fever to 67° in cholera. The mean temperature of birds is rather higher than that of mammals, averaging about 108° , while mammals average about 101° . Animal heat arises from the various changes that are constantly going on within the bodies of the animals. Every change that takes place in the condition of the organic components of the body, in which their elements enter into new combinations with oxygen, is necessarily a source of the development of heat. By the union of the oxygen of the atmosphere with the carbon and hydrogen of the body, a species of combustion takes place, and heat is evolved. Hence we find that the more rapidly this combustion is carried on, the greater the amount of heat produced; and hence exercise increases the heat of the body. Some have held that combustion was not sufficient to account for the total amount of heat generated in a living body; but the most recent authorities are now generally agreed that such is the case, especially when we take into account the small quantities of sulphur and phosphorus which also undergo oxidation within the system. But, while a low degree of heat destroys vital activity, not less destructive to it is a high degree of heat. By a wise provision, therefore, the body has the power of maintaining itself in a moderate state of heat, even when surrounded by a very hot medium. Thus Banks, Blagden, and Fergyde exposed themselves to a heat of nearly 150° , and found that their bodies had preserved nearly their own temperature. This is owing to the cutaneous and pulmonary evaporation, which takes place. Animals placed in a hot atmosphere so saturated with humidity that no evaporation could take place, could not support a heat but little greater than their own, without perishing.

Anodyne.

ANIMAL MAGNETISM.—The mysterious influence which one man appears, by an effort of the will, to exercise upon the body of another man, and which, undoubtedly, gives rise to many very remarkable phenomena, has been rashly ascribed to a peculiar modification of magnetic force. Those few who have studied mesmeric manifestations in a scientific spirit have, however, very wisely discarded the term *animal-magnetism*, as it pretends to define an agent that we have no evidence to exist. (See MESMERISM.)

ANIMALCULES, *an-i-mal'ku-les* [Lat. *animalculum*, a little animal].—This is a general term for animals so exceedingly minute that they cannot be studied without the aid of the microscope. Some of these are so minute that multitudes of them are found to exist in a drop of water.

ANISE, *an'-isee* [Gr. *anisos*, Lat. *anisum*], an umbelliferous plant, cultivated in Egypt, Malta, Spain, and Germany, for the sake of its fruit, called aniseed, which is extensively used for flavouring liqueurs and confections, and medicinally as a carminative. The botanical name of the plant is *Pimpinella Anisum*. Star or Chinese aniseed is the fruit of the *Illicium anisatum*, a small tree in the nat. ord. *Magnoliaceae*. It has a starlike form, hence its name, and a flavour similar to that of the common aniseed. Oil of aniseed is obtained by distilling the fruit, and even the stems and leaves, of the common aniso. For this, a similar product, yielded by the star aniseed, is frequently substituted. The true oil and its substitute have the aromatic properties of the fruits, and are employed for the same purposes. Dose of the oil from 5 to 20 drops on sugar; of the powdered seeds, from 10 to 30 grains; and of the infusion, a wine-glass full.

ANKLE, in Anat., is the joint which connects the foot and the leg. It is formed by the lower ends of the tibia and fibula united so as to form an arch into which the superior convex surface of the astragalus is received. From its position, this joint is very liable to be sprained or dislocated. (See DISLOCATION, SPRAIN.) Children have often distorted ankles from feebleness of constitution, or from being allowed to walk too soon. In such cases, the general health is to be improved by means of nourishing diet and tonics, as iron; and the child is not to be allowed to stand or run about too much. Stout elastic stockings should be worn, and even, if necessary, iron-irons; and the boots should be made thicker in the sole on that side to which the ankle is inclined. The ankles should also be bathed twice a day in cold salt water, and vigorously rubbed with a rough towel.

ANODYNE, *an'-o-dine* [Gr. *a*, without, *odous*, pain], a medicine which allays pain. The term is usually applied only to a medicine which acts upon the nervous system, so as to decrease sensibility and induce sleep, or

Antacid.

a state of partial unconsciousness. The most important sedatives are preparations of opium. (See OPIUM.)

ANTACID., *ant-ä-sid* [Gr *anti*, against, and *acid*] a term applied to such medicines as possess the quality of correcting acidity or sourness in the stomach. The principal antacids are potash, soda, ammonia, magnesia lime, and their carbonates. The carbonate is the form in which they are usually administered.

ANTAGONIST *MUSCLES*, *an-täg'ñist* [Gr *anti*, against, *agonistes* a combatant], in Anat are those muscles which act in opposition to each other as flexors or extensors, abductors and adductors.

ANTALKAI *ant al kai* [Gr *anti* against and *alkal*] a name applied to such medicines as tend to counteract the presence of alkali in the system. The alkalis in most common use are muriatic nitric, and citric acids.

ANTERFLIX *ant er flis* [Gr *anthelos* from *anti* opposite to, and *heris* anything twined] the outer cartilage of the ear] in Anat is an eminence on the cartilage of the ear situated before, or more properly within the helix or outer circle of the ear. It consists of two ridges at its upper part, which unite as they descend.

ANTHERIMINTIC *an ther min tis* [Gr *anti*, against, and *theris* a worm] a term applied to such medicines as have the effect of destroying worms in the stomach and intestines. They are of various kinds, but may be divided into three classes—those which by increasing the peristaltic motion of the intestines, tend to dislodge the worms; and 1 may thus occasion their expulsion—those purgatives of various kinds, those which tend to strengthen the stomach and intestines and the system generally—is tonics of aseptics, and those which act specially upon the worms, dislodging, weakening or killing them. These last are anthelmintic property so called. The principal medicines of this class are tan andirin inflamed cobra's milk, cassia or brayre, aethomintic oil of turpentine, male fern calomel gamboge jalap, aloes quassia, tansy. (See those articles, also Worms.)

ANTHEMIS *an the mis* [Gr.] the Chamomile plant, in Bot, a genus of plants belonging to the nat ord *Compositae* sub ord *Tubifl.* flow., and distinguished by having the scales surrounding the lower heads membranous at the borders, like those of a *bryanthemum*, from which genus it, in fact, differs chiefly in the receptacle of the flower being furnished with little chaffy projections. The most important plant of the genus is *A. nobilis*, the common chamomile, which is extensively cultivated for the sake of its flowers. It is an indigenous perennial, flowering from June to September, and growing on open gravelly pastures and commons. The capitula, which

Antidote.

are commonly termed flowers, are each composed of a number of tubular yellow florets, arranged on a receptacle, and surrounded by a circle of ligulate white florets. The double variety is produced at the expense of the tubular florets, which become converted into ligulate florets. The single flowers are to be preferred for medical purposes as the central yellow florets contain much more volatile oil than the white ones. Chamomile is cultivated for the London market at Mitcham and in some parts of Derbyshire. Both leaves and flowers possess a strong but not unpleasant aromatic odour and a nauseous bitter taste. The principal constituents of the flowers are volatile oil, tannin, and bitter resinous matter. The oil which is procured by distillation is stimulant tonic, and antiperiodic and is frequently used in the preparation of tonic and cathartic pills, and to relieve flatulence griping anaeructation. The extract and infusion of the dried flowers have the same properties as the oil, and are used for the same purposes. The infusion is formed by half an ounce of the flowers to ten fluid ounces of boiling distilled water infused in a covered vessel for fifteen minutes and then strained. Dose, from one to four fluid ounces. It is also employed externally for fomentations.

ANTHER *an ther* [Gr *antheros* belonging to a flower] in Bot, an essential portion of the stamen being the big or case which contains the pollen. It is generally supported on the summit of a little column or stalk called the *filament*. The pollen is discharged at certain periods through little slits or holes formed in the anther.

ANIBRA (See CARBOLINE)

ANTI a Greek word signifying against and is frequently used in compound medical terms, as anti bilious anti spasmodic modi ones that tend to counteract biliousness, spasms. (See BILIOUS SPASM, &c.)

ANTIDOTE *an ti do te* [Gr *anti*, against and *dotes* given] in Med is a term applied to remedies or preservatives against sickness but more strictly to substances which counteract the effects of poison. Antidotes are of two kinds (1) such as act chemically, and by decomposing the poison render it inert, and (2) such as act mechanically, by simply covering the mucous surface of the intestines, and thus protecting them from the action of the poison, and prevent its absorption into the system. Of this last are oleiginous, albuminous, gelatinous substances (See Poisons). It has lately been discovered that certain poisons act antagonistic to other poisons. In 1863 Dr. T. R. Fraser read a paper before the Royal Society of Edinburgh, "On the antagonism between the actions of *Physostigma* (calabar beans) and *Belladonna*," describing a number of experiments which went to show that fatal doses of one of these poisons are

Antimony Acid.

counteracted by the administration of the other.

ANTIMONY ACID (See ANTIMONY)

ANTIMONY ACID (See ANTIMONY)

Antimony *an'ti-mo'ni* *ē* is a brilliant bluish-white metal, symbol Sb, from the Latin *antimonium*, atomic weight 120; specific gravity, 6.7. It fuses at 820° F. It is so brittle that it may be reduced to powder by being pounded in a mortar. It volatilizes at a red heat. It is a bad conductor of electricity and heat. When heated in air, it burns, and gives off copious white fumes, consisting of teroxide of antimony. It is also oxidized by nitric and sulphuric acid, and dissolved by aqua regia. In its chemical relations it is allied to nitrogen, phosphorus and arsenic and forms with the last one of the connecting links between the metallic and non-metallic elements. It forms the oxide Sb_2O_3 — *Tetroxide of antimony*, Sb_2O_5 , a greyish white powder, which is procured by boiling the metal with sulphuric acid and evaporating to dryness. *Antimoniun*, SbCl_3 , a pale yellow powder, tasteless and insoluble, made by adding nitric acid to the tertiussulphide, and driving off the excess of nitric acid by heat. *Antimoniun* and *Antimony acid*. If antimony acid be heated strongly a compound is produced containing antimony acid combined with tetroxide of antimony. This is erroneously called an acid but is really either a tetroxide of antimony or an antimoniate of antimony, i.e. either SbO_4 or Sb_2O_5 . *Tetra-hydriodic acid of antimony*, or *bitter of antimony* SbCl_4 , is formed by heating the tertiussulphide with hydrochloric acid. It is very dilute and forms a buttery mass whence its commercial name *Lecithine of antimony* or *cure native* in grey lead coloured mass and is the chief ore from which antimony is procured. The hydrated tertiussulphide mixed with the tetroxide, is an amorphous red powder and was formerly used in medicine under the name of *Kermes Mineral*. The principal medicinal preparations of antimony are the tertiussulphide of antimony, called also *Flowers of Antimony*, given in doses of 3 to 10 grains, in the form of powder or pill, *antimonial*, or *James's powder* formed of one part of oxide of antimony, and two parts of phosphate of lime, mixed and given in doses of 3 to 10 grains, *solution of chloride of antimony* composed of one pound of black antimony or prepared sulphate of antimony, and four pints of hydrochloric acid sometimes used externally, as an active caustic, but never administered internally, *sulphureted antimony*, composed of 10 ounces of black antimony, four and a half pints of solution of soda, and of diluted sulphuric acid, and distilled water a sufficient quantity of each — dose: 1/4 grain *tetratoxide of antimony*, composed of five ounces of oxide of antimony six ounces of acid tetratoxide of potash,

Antiphlogistic.

and two pints of distilled water, given as a diaphoretic, in doses of one-eighth to one-sixth of a grain, as an emetic, one to two grains. *Antimonial wine* is composed of forty grains of tartrated antimony to one pint of sherry, dose, 5 minims to 1 fluid drachm. The effects of antimonials preparations are all similar in their nature. In small doses, they are stimulant, diaphoretic, and expectorant; in larger doses, emetic. They are frequently valuable in cold, catarrhal affections, by stimulating the excretion of fluids by the skin and mucous membranes. The most common and the first form in which antimony is used is *lunettes powder*, and the tartrate or *antimonial wine*.

ANTIPATHY *an'ti-pa θ |e* [Gr. *anti* and *pathe* feeling] in its widest sense denotes the natural dislike or aversion which an animate being entertains for some particular object as the antipathy of sheep to wolves or of a turkey cock to the colour red. In the human species we frequently meet with remarkable cases of antipathy by certain individuals to objects which are grateful or indifferent to the generality of man kind. Thus some have an antipathy to certain kinds of food as butter or eggs, to certain animals as toads, mice, spiders, to certain tastes smells sounds, &c. In some cases the antipathy is so strong as to produce sickness or fainting. Doubtless many of these feelings may be traced to early training in which children are frightened with certain objects or nauseated with certain kinds of food. But antipathy is not always a conscious caprice which may be reined in by an effort of the will, or by habit for it is sometimes found that the effects of the presence of these objects are manifested on the individual, though their presence be unknown, and that substances for which he feels an antipathy, when passed on unconsciously, may produce in him exactly the same symptoms as if he had partaken of them knowingly. It is difficult to account for this except on the principle that there lie beyond the sphere of our consciousness feelings, and impressions which only become known to us by their effects. In order to overcome such antipathies, which may otherwise become the source of much pain or annoyance to the individual, it is necessary to accustom him gradually to the object of dislike from early years, and in this way almost any antipathy may be overcome. Antipathy is sometimes also used to denote that mode of treating disease by means of opposites or medicines that produce an opposite effect to the character of the disease, as purgatives to relieve constipation, narcotics to ease pain. It thus corresponds to *Antidote*, and is opposed to *Homoeopathy* (which see).

ANTIPHLOGISTIC *an'ti-flo'gi-stik* [Gr. *anti*, and *phlegma*, inflammation], is a term ap-

Antiscorbutics

plied to such remedies as tend to remove, lessen, or prevent inflammation, as blood-letting, purgatives, low diet, &c. The antiphlogistic mode of treatment is now much less resorted to than formerly, medical men having come to see the necessity rather of supporting than of lowering the vital powers (See INFLAMMATION.)

ANTISCORBUTICOS, *an-tis-kor bu-tikos* [from *anti*, against, and *scorbutus*, a barbarous Latin word for scurvy], a term applied to remedies against scurvy. (See SCURVY.)

ANTIPHTHICOS, *an-ti-fift-i-kos* [Gr. *anti*, against, *septem*, to putrefy], are the means or substances by which the decay or putrefaction of dead vegetable or animal substances is prevented or checked. There are three conditions which favour putrefaction — 1, a certain degree of warmth, 2, air, 3, moisture, by the absence of one or more of which its progress is retarded or arrested. The preservative power of cold is observable in animal or vegetable substances imbedded in the ice, and the packing of fish in barrels with ice is a common means adopted for preserving them. The exclusion of air is another means of checking putrefaction. In this way, meats are frequently preserved by being put into tin canisters, which, after the air is carefully extracted, are soldered down. Again, substances may be preserved by the abstraction of moisture, e.g. in plants, dried fish, bacon, &c. The more important chemical antiphtotics are alcohol, salt nitro, alum, crevate, arsenic, corrosive sublimate, sulphate of copper, chloride of zinc, chloride of lime, and carbonic acid.

ANTIPHTHICOS, *an-ti-fift mod ik*; [Gr. *anti*, and *spasmo*, a spasm] in Med. are those remedies which are employed to allay or remove spasms. Spasms arise from various causes, and hence the remedies are different. They may be caused by irritation in the intestinal canal by worms &c., and hence purgatives or anthelmintics are to be used. Anodynes or narcotics as opium or belladonna, serve to deaden the nervous irritability to which spasms are frequently owing. Sometimes they arise from mere debility, and hence, strengthening diet, and tonics, as nitrate of silver, sulphate of zinc, nitrate of bismuth, quinine, &c. (See SPASM.)

ANUS, d' ans [Lat.], in Anatomy, is the lowest part of the alimentary canal, forming its outlet. It is surrounded by a muscle, called the *external ani*, by which it is kept close, except when the bowels are being evacuated. When paralysis, or other disease, attacks this part so that it cannot perform its function, the evacuations become involuntary. The anus is not unfrequently the seat of troublesome disease, as Fistula, Fissure, &c. (which see). Sometimes, particularly in delicate children, the lower part of the intestines are apt to protrude out of the body, which is called *prolapsus ani*.

Apocynacees.

Those who are subject to this diarrhoea should be watched, and the gut carefully replaced by gentle pressure with the fingers, previously well rubbed with sweet oil. They should not be allowed to sit long at stool, or to strain much, and the bowels should be kept in an easy state, but not too loose.

AORTA (See ANATOMY.)

ARPHONIA, *a'�-ni-a* [Gr. *a*, without, and *phone*, voice], a deprivation or loss of voice. It may arise from various causes, as from a shock or fright, or it may be a hysterical affection. Disease of the brain is also not an infrequent cause of aphonia. It may also be owing to disease, inflammation, or ulceration of the vocal chords or parts adjoining. The instrument called the Laryngoscope (which see) now throws much light upon this last form of the disease, by revealing the condition of the throat. In inflammation or ulceration about the vocal chords, a solution of 40 to 80 grains of the crystal of the nitrate of silver to an ounce of distilled water is recommended to be applied by means of a curved brush.

APHTHA, ap'ftha [Gr. *apto*, I inflame], is commonly known as the *thrush*, and is characterised by small round white ulcers, resembling *traclos* of curd, appearing upon the tongue and other parts of the mouth, and sometimes extending down the oesophagus. This is a disease frequent with children during the period of lactation, and is usually attended with other symptoms, as drowsiness, sickness, diarrhoea, and some feverishness. It generally runs its course in eight or ten days, and is not attended with much danger. It is generally owing to improper diet or bad milk, and is to be treated by light nourishing food, tonics and mild astringents. Where the aphthae are troublesome, they may be painted with glycerine or borax. Aphthae sometimes occur in adults, denoting general debility, or a deranged state of the digestive organs, and occurring in the course of other diseases, as phthisis, they frequently cause death.

APNEA, *ap-ne'-a* [Gr. *a*, not, and *pnoe*, I breathe], denotes, properly, deprivation of breath, or suffocation. (See Suffocation, Asphyxia, DROWNING, &c.)

APOCYNACEES, *ap'ko-sin-e-e* [Gr. *apo*, against *kun*, dog], in Bot., the Dogbane order of dicotyledonous plants, included in the sub class *Ceratophylla* — trees or shrubs generally having milky juices. The Dogbanes are natives principally of tropical regions, a few only occurring in northern latitudes. *Vince* the periwinkle, is the only British genus. Some of the plants of this order are intensely poisonous, and all are to be suspected, though a few yield edible fruit. Some are drastic purgatives and in some the bark is tonic and febrifugal. They have usually large showy flowers, and are

Apoxy.

on that account cultivated in our hothouses. Caoutchouc, or india-rubber, is prepared from the milky juice of several species.

Apoxy. *ap-o-pe'ze* [Gr. *apopeize*, a sudden blow, a privation of sense and motion], is a disease characterized by a sudden loss of consciousness and voluntary motion, while the organic functions of the body—circulation, respiration, secretion, &c.—are still carried on, but usually in a more or less impaired state. The face is generally flushed, the breathing slow, deep, and stertorous, the pulse fuller, stronger, and slower than natural, and the skin covered with a cold clammy perspiration; sometimes, however, the pulse, instead of being full and strong, is weak and intermittent, and the face pale and dejected. It is a state of coma, occurring suddenly from internal pressure upon the brain. It is frequently difficult to distinguish it from coma arising from other causes, as from alcohol, opium, chloroform, &c.; and yet it is of the greatest importance to be able to distinguish them, as they require to be treated differently. The history of the case, the general appearance and age of the individual, the presence or absence of the odour of spirits, may be the only points to which we can look for the solution of the difficulty. Frequently, however, in intoxication, the patient may be momentarily roused to consciousness, but not so in apoplexy; and commonly, too, the breathing is not so marked or stertorous in the former case as in the latter. Apoplexy is occasioned by whatever unduly impedes or accelerates the circulation of the blood within the brain, or exerts a certain degree of pressure upon it. Hence, violent exertion, either of mind or body, great mental anxiety, intemperance in eating or drinking, are among the exciting causes of it. Males are much more liable to it than females, and it is most common between the ages of 50 and 70. A man of a sanguine plethoric temperament, with large head and full neck, is most liable to its attacks, though lean persons are also not unfrequently among its victims. Though the attack is usually so sudden, it is not without its premonitory symptoms, which, though numerous and diversified, are yet obvious and easily understood. Among these, are excessive drowsiness, giddiness and headache, with, frequently, dulness of hearing, imperfect or disordered vision, noise in the ears, loss of memory, &c. Sometimes the attack is preceded by paroxysms affecting the speech, hands, foot, or other part of the body, and frequently it is succeeded by paralysis. Physicians usually distinguish three different modes of attack—(1), in which the patient falls down suddenly, deprived of all sensation and voluntary motion; (2), the attack is preceded by a sudden sharp pain in the head, the patient becomes pale, faint, sick, and

Apothecaries' Company.

usually vomits; this wears off, and in a short time he becomes heavy, drowsy, forgetful, and sinks into coma, from which he rarely recovers; (3), the patient is suddenly seized by an attack of paralysis of one side of the body, with, frequently, loss or impairment of speech, but without loss of consciousness. This last, however, does not always pass into apoplexy, but may continue in that form, or may even, in favourable cases, gradually go off. Apoplexy may terminate in three different ways—(1), it may cease, more or less rapidly, and leave the patient, to all appearance, in perfect health; (2), the patient recovers, but with his mental powers enfeebled, sensation impaired, or voluntary motion limited; (3), it may terminate, more or less quickly, in death, in which case there may be found to be a quantity of extravasated blood on the brain, an effusion of serum, or there may be no appearance whatever of the disease. When judicious remedies are adopted in time, an attack may generally be averted or rendered comparatively mild. Much necessarily depends upon the patient himself; upon his avoiding those states and modes of life that predispose to it, taking regular and moderate exercise, and attending to the state of his bowels. The active treatment to be adopted during or preceding the attack differs according to the cause that may have induced it. In some cases the abstraction of blood may be indispensable; in others stimulating remedies are what may be required. In all cases, however, the patient's head should be raised, the head and neck bared, and the free circulation of fresh air promoted; and, as soon as possible, purgative medicines should be administered. The attack may last from a few hours to two or three days; and even when it does not destroy life, it usually gives a shock to the constitution, which is seldom entirely recovered from.

Apothecaries' Company. *a-poth'-e-ca'res.*—The company of Apothecaries, which is one of the most important guilds of the city of London, was established in the early part of the 17th century. The Apothecaries were first incorporated with the company of Grocers in the year 1606. Eleven years after, they were separated from the Grocers, and incorporated by a charter granted by King James I., as "The Master, Wardens, and Society of the Art and Mystery of Apothecaries of the City of London." This charter was granted by the King at the advice of his physicians Gideon de Laune, Mayerne, and Atkins; and it was enacted that no grocer or others should retail any medicines, without the company's consent, within the city, or seven miles thereof; at the same time, the company obtained full permission to seize all unlicensed drugs. By the statutes of William III. and Anne, "Apothecaries of the city of London are

Apothecaries' Weights, &c

tempted from the offices of constables, scavengers, overseers of the poor, and other parish, ward, and lass officers, and of and from serving upon juries or inquests." Towards the close of the 17th century, the apothecaries of London began to prescribe as well as to dispense medicines, and by way of retaliation, the College of Physicians established a dispensary for the sale of medicines at prime cost. The privileges of the Apothecaries' Company were subsequently greatly enlarged, and the right of members to prescribe in a certain restricted sense was confirmed by an act of parliament 55 Geo III c 194. The apothecaries come under the medical act of 1858 and the subsequent acts amending it and are required to be registered in terms thereof.

APOTHECARIES' WEIGHTS AND MEASURES.—Formerly, the weights used by physicians and apothecaries (chemists and druggists) in prescribing and compounding medicines differed materially from that used in general commerce. The term *apothecaries' weight* was usually applied to one system and *troy weight* to the other. There is also *troy weight* used by jewellers and at the mints in exchange of the precious metals. In each system there was a pound and an ounce, but the apothecaries' pound contained 1,240 grains less than the avoirdupois pound, and the apothecaries' ounce 4½ grains more than the avoirdupois ounce. Thus the original system has the larger ounce, and the commercial large pound 1½ weight agreed with apothecaries' weight in the ounce and pound 1. The convenience attendant on the use of septuplicate sets of weights has long been recognized, and it has at length been remedied in the last edition of the British Pharmacopœia, where the avoirdupois weight has been substituted for the troy, the pound being made to contain 7,000 grains in place of 5,760, and being divided into 16 ounces of a piece of twelve, each containing 437 5 grains as follows—

$$1 \text{ grain} = 1 \text{ grain}$$

$$1 \text{ ounce} = 437 5 \text{ grains}$$

$$1 \text{ pound} = 7,000 \text{ grains} = 16 \text{ ounces}$$

For the sake of comparison, we give also the old weights.

$$20 \text{ grains} = 1 \text{ scruple} = 20 \text{ grain}$$

$$60 \text{ grains} = 1 \text{ drachm} = 3 \text{ scruples}$$

$$480 \text{ grains} = 1 \text{ ounce} = 8 \text{ drachms}$$

$$5,760 \text{ grains} = 1 \text{ pound} = 12 \text{ ounces}$$

The scruple and drachm are discarded in the new weights. Measures of capacity are used for liquids in mixing medicines. Formerly, wine measure was employed, but now is it the imperial. The weight of the imperial minum of water is 91 grain, and is multiplied as follows—

$$60 \text{ minims} = 1 \text{ fluid dr} = 60 \text{ minims}$$

$$480 \text{ minims} = 1 \text{ fluid oz} = 8 \text{ fluid dr}$$

$$600 \text{ minims} = 1 \text{ pint} = 8 \text{ fluid oz}$$

$$100 \text{ minims} = 1 \text{ gallon} = 8 \text{ pints}$$

Apple

The fluid ounce is the measure of one ounce of water, the pint, $\frac{1}{4}$ lb., and the gallon. In prescriptions, the weights and measures are generally expressed by signs or symbols, with Latin numerals affixed. These signs, with the Latin and English words which stand for them, are given below—

¶ Minim, $\frac{1}{6}$ th part of a fluid drachm

ij. Scrupule, a scruple

3j. Drachma, a drachm

ij. Fluid drachma, a measured drachm

ij. Uncia, an ounce (437 5 grains)

ij. Iunl uncia, a measured ounce

lb. Libra, a pound (7,000 grains)

Oj. Octarius, a part

gr. Granum, a grain
as Semis, half, affixed to any of the above signs

The numerals i, ii, iii, iv, v, &c. show the number of grains ounces, pounds &c. to be taken when mix denotes 60 minims, 3j. or 1 fluid drachm, and ij. 1 ounce.

APPETITE. [*apetere, I desire,*] in general, denotes a desire of enjoying something that is believed or felt to be necessary to or conducive to our happiness, and is more particularly applied to that desire for food which in a healthy state of the body, is felt at regular intervals, and which indicates the necessity of a fresh supply of food in order to compensate for the bodily waste that has taken place. In general when not depraved or perverted or pampered the appetite is in a valuable and faithful guide as to whom how and to what extent nourishment is required. When disease comes on the appetite usually flags, an indication from nature that the process of digestion cannot be carried on as before, and therefore in such cases it is generally injudicious to press food upon one in these circumstances. In fevers and many other disorders a loss of appetite is one of the most frequent features, but sometimes it occurs as the principal or only characteristic, and then it is owing to a disordered state of the digestive organs. (*See DISSOCIATION, FOOD.*)

APPLE. [*Ang. Sax. æppel;*] the fruit of the *Pyrus Malus*, a tree belonging to the natural order Rosaceæ. (See PRUNUS.) All the different kinds of apple trees now in cultivation are usually regarded as mere varieties of the one species which in its wild state is known as the crab tree. This plant is a native of Britain, and is found in most of the temperate parts of the northern hemisphere. Its fruit is austere and unpalatable, but is sometimes collected for the sake of its acid juice which, when fermented, forms the liquid called *scrupus*, used in cookery, and for purifying wax. The cultivated tree was probably introduced into Britain by the Romans who are said to have had twenty-two varieties. At the present time it is, perhaps, the most widely diffused and most valuable of all fruit trees, and the varieties,

Apricot.

which are adapted to almost every soil, situation, and climate in the temperate zone, have become extremely numerous. The apple, i.e. the fruit, varies greatly in size, form, and colour. The eatable part has a more or less aromatic, sweet, or sub-acid taste, and contains starch, grape-sugar, and malic acid. Apples are commonly divided into dessert, baking, and cider fruits, the first being highly flavoured, the second such as become soft in baking or boiling, and the third those which are hard and austere. Apples are also classed under the general name of Pippins, Pearmaines, Rennets, Calvilles, Russets, Codlins, &c. Large quantities of apples are imported into England from France, Canada, and the Northern States of America. The use of the apple,—for the dessert, for puddings and pies, for preserving, and making jelly,—is sufficiently well known. Cider, the fermented juice of the apple, is a favourite drink in many parts of England and France. Malic acid is also extracted from the apple. (See *Orchis, Malic Acid.*)

APRICOT., *ap'-pri-kot* [Lat. *præcox*, blossoming early], the popular name for *Franus Armeniaca*, a fruit tree belonging to the same gen. as the plum. It blossoms at the very commencement of spring, and bears a fruit resembling the peach, but with yellow flesh. It appears, from Turner's "Herbal," that the apricot was cultivated in Britain in 1562; and in Hakluyt's "Remembrancer," 1582, it is affirmed that it was first brought here from Italy by Wolfe, a French priest, gardener to Henry VIII. Upwards of twenty varieties are now in cultivation. The trees are generally budded on plum stocks, and trained against walls. The dried fruits are exported from Italy and the south of France.

AQUA., *ai'-kwa*, is the name given in Latin to water. Water, owing to its great solvent powers, is never found naturally in a perfectly pure state, but always more or less impregnated with foreign substances, and hence, the necessity, in most chemical pharmaceutical operations, of using distilled water—*Aqua Distillata*. This is obtained by taking a certain quantity of spring or river water, and distilling it in a copper still with a block-tin worm, rejecting the first twentieth part, and preserving the first three-fourths of the remainder. This is to be preserved in well-corked bottles. Frequently, however, rain-water, filtered through alternate strata of well-washed sand and charcoal, will answer equally well with distilled water; for frequently, in prescriptions, distilled water is ordered when there is no necessity for its use. Frequently distillation is had recourse to to extract and preserve the volatile oil of plants. A certain quantity of the plant is taken with, perhaps, two gallons of water and one half distilled. Thus, we have *aqua amethia*, or dill water;

Arachnoid.

aqua aniæ, or aniseed water; *aqua cinnamoni*, or cinnamon water. These are seldom used as active remedies, but more frequently as elegant mediums for the exhibition of less agreeable medicines. (See *Water.*)

AQUARORTIS. (See *Nitric Acid.*)

AQUA REGIA., *ai'-kwa re'-jì-a* [Lat. royal water], in Chem., a substance so called from its property of dissolving gold, the royal metal. It is the commercial name for nitro-hydrochloric acid, which is made by mixing one part of nitric acid with two or three parts of hydrochloric acid. The acids decompose each other, chlorine and nitrous acid being liberated, the former of which attacks the gold or other metal acted upon, forming a chloride. It is much used by chemists; as a solvent for gold, platinum, iridium, osmium, and other metals.

AQUA TOFANA., *ai'-kwa to-fa'-na*, a celebrated liquid poison, said to have been invented at the close of the 17th century, by a Palermitean woman, named Tofana; whence the term. This compound was retailed in small phials, labelled "Manna of Saint Nicholas of Bari," and was supposed to have a miraculous power in curing various diseases. Its effect, however, was to kill those to whom it was administered; on which account it was much sought after by married women who were anxious to get rid of their husbands. In 1659, so great was the mortality amongst married men, that suspicion was awakened, and a horrible secret society was discovered, at the head of which was an old hag named Spara, who, with several of her guilty companions, was executed. The woman Tofana fled to a cloister for asylum, and escaped punishment during many years; but was, in 1709, torn from her place of refuge, and, on being put to the torture, confessed to having been instrumental to the death of 600 persons. The Aqua Tofana is said to have been a limpid, inodorous fluid, six drops of which sufficed to cause death. The experiments made by chemists at a subsequent period lead to the belief that it was mainly a solution of arsenic.

AQUATIC PLANTS., *d-qui'-ik*.—All plants growing in water may be termed *aquatic*; but, by botanists, the term is usually applied only to those found in *fresh* water, either stagnant or running; as, *Sagittaria*, arrow-head; *Nymphaea*, water-lily; *Potamogeton*, pond-weed; *Utricularia*, bladderwort; *Lemna*, duck-weed. Some of these root in the soil, and appear above the surface of the water; others root in the soil and remain submersed; while others, again, swim freely on the surface, without rooting below.

AQUEOUS HUMOUR., *ai'-que-u*, is the name given to that watery fluid of the eye which is situated between the back of the cornea and front of the lens. (See *Eye.*)

ARABIC GUM. (See *Gum.*)**ARACHNOID.**, *ai'-rik-noid* [Gr. *arachnoëdes*,

Aralia.

from *arachne*, a spider; and *sida*, form or likeness], literally signifies cobweb-like. In Anat., the *arachnoid membrane* is the name of one of three membranes which envelop the brain and spinal chord. It is situated between the dura and the pia mater, and is a thin glistening membrane. (See BRAIN.)

ARALIA, *a'-ra-l'i-a*, in Bot., a gen. of plants belonging to the nat. ord. *Araliaceæ*. It contains a considerable number of species, —trees, shrubs, and herbs, some of which yield useful products. *A. nudicaulis* is a native of North America, where its roots are used popularly in the treatment of rheumatic affections. They are commonly known as false or American sarsaparilla, and are sometimes forwarded to this country. The bark of *A. spinosa*, the angelica or toothache-tree, and also a native of North America, is used as a stimulant diaphoretic; and the berries are said to be useful in toothache, whence the name.

ARCHANGELICA, *ark-an-jel'-i-ka*, in Bot., the herb Archangel, a gen. of plants belonging to the nat. ord. *Umbellifera*. The species are mostly herbaceous and perennial, natives of the cold and temperate regions of the northern hemisphere. *A. officinalis*, the garden angelica, is an indigenous biennial, growing in watery places, but somewhat rare in this country. It flowers from June to September, the blossoms being greenish-white. Its root is large and fleshy, resinous, and pungently aromatic. It is imported from Hamburg in the dried state for medicinal purposes, being stomachic and carminative. The fruit, improperly termed the seed, has similar properties. The tender stems and mid-ribs of the leaves are boiled in syrup, and, when dried, constitute candied angelica, which, taken as a dessert, is a very agreeable stomachic. The plant is cultivated for the purpose of candying, in the neighbourhood of London. Large quantities of angelicas are used in the preparation of London gin and the liquor known as "bitters."

ARCTIUM, the name of a genus of plants of the nat. ord. *Composita*. *Arctium lappa*, the common burdock or cliff-bur, is a stout erect branching biennial plant, from 3 to 5 feet high, with very large leaves, common on roadsides and waste places all over Europe. The root is tonic, diuretic, and alterative; the seeds, bitter and cathartic; and the leaves are sometimes used as local applications in diseases of the skin. A decoction is made by taking two ounces of the leaves or root, and two pints of water; and boiling it down to one. This quantity may be taken in three doses in the course of a day. It is said to be useful in gout, scorbutic, and other affections.

ACTOSTAPHYLOS, *ark-toe-ta'-f'i-los*, in Bot., a gen. of plants belonging to the nat. ord. of *Ericaceæ*. The species *A. uva-ursi*, the common bear-berry, is found wild in the mount-

Argemone.

tainous parts of England and Scotland, and generally over the whole of Northern Europe. It is a trailing shrubby plant, with leathery dark-green leaves. The flowers are white, tinged with pink, small, and in clusters; the berries small and red, resembling those of the hawthorn. The whole plant possesses astringent properties, and is sometimes used in tanning. The leaves are frequently employed as medicinal agents in those cases where vegetable astringents are required; they have also been used as an antidote in poisoning by ipecacuanha. The infusion is made from $\frac{1}{2}$ ounce of the leaves bruised and to fluid ounces of distilled boiling water, kept in a covered vessel for two hours, and then strained. Dose, 1 to 2 fluid ounces three times a day. It is tonic and mildly diuretic.

ARECA, *a'-re'-ka*, in Bot., a gen. of plants belonging to the nat. ord. *Palmae*—the Palms, containing two species, each remarkable for the purposes to which it is applied. *A. catechu*, the betel-nut palm, has been described as the most beautiful palm in India. The stem is remarkably straight, and often from 40 to 50 feet high, and generally about 20 inches in circumference. It is cultivated throughout India for the sake of its seeds, which are known as betel, areca, and pinang nuts. The nut is one of the ingredients in the famed masticatory of the East called betel (which see). Charcoal prepared from the nuts, and termed arecanut charcoal, is used in this country as a tooth powder; but it is doubtful whether it is in any way superior to ordinary charcoal. An extract is made from the nuts in the south of India, and constitutes one of the commercial varieties of catchua (which see). *A. oleacea*, the cabbage palm, is a native of Jamaica and other West India islands. The trunk, which is seldom more than six or seven inches in diameter, grows to a height of from 100 to 200 feet. The majestic palm is frequently cut down for the sake of the single terminal bud, called the cabbage, which is eaten either raw or boiled as a vegetable.

AREOLA, *a'-re-o'-la* [Lat., a small open space or circle, diminutive of *area*], is a term applied to the small interstices of minute cellular or other tissues, through which the smallest vessels and nerves pass. It is also applied to the small red or brownish circle which surrounds the nipples of females, or the ring which surrounds the pustule of small or cow pox.

ARGEMONE, *ar'-ge-m'o-ne*, in Bot., a gen. of plants belonging to the nat. ord. *Papaveraceæ*, the Poppy family. *A. Mexicana*, the Mexican or gamboge thistle, is an annual herbaceous plant, with large yellow flowers, and sessile, waved, and sinuated spiny leaves. It is a native of Mexico, but is cultivated in England and other parts of Europe as an ornamental plant. The seeds possess nar-

Argentum.

catic and purgative properties; and an oil is obtained from them which has been recommended as a remedy for cholera. In the West Indies the seeds are used as a substitute for ipecacuanha.

ARGENTUM, ARSENIC NITRAS, &c. (See SILVER.)

Argol, *ar'-gol*, the crude tartar which is deposited by all wines as a crust upon the inside of the casks in which they are stored. Argol is the source from which are obtained tartaric acid and common cream of tartar, which is a tartrate of potash. Argol is dissolved in hot water, which, when cold, deposits the cream of tartar in small oblique rhombic prisms. (See CREAM OF TARTAR.)

ARALIA, *är-i-sé'-ma*, in Bot., a gen. of plants belonging to the nat. ord. *Aralaceæ*, the Aralia family. The species *A. atrorubens*, Dragon-root, or Indian Turnip, is a native of North America. From the tuber a nutritious fucus is obtained. In Medicine, the tuber is also occasionally used, being given internally as a stimulant in rheumatism and bronchial diseases, and being also employed as an application to aphthous affections in children.

ARISTOLOCHIA, *a-ri-tä-lo'-chi-ai*, in Bot., Birthwort, the typical genus of the nat. ord. *Aristolochiaceæ*. Several species of this genus have been employed for centuries in Medicine, principally on account of their supposed emmenagogue properties; and hence the name Birthwort. The rhizome and root-fibres of *A. serpentaria*, commonly called serpentary, or Virginian snake-root, are officinal, and have a warm bitter camphoraceous taste, and a strong aromatic camphoraceous odour. Serpentary was originally introduced as an antidote to snake-bites, but it is now known that it has no efficacy in such cases. It is a valuable stimulant, tonic, and diaphoretic, and is especially useful in fevers of a low typhoid character. It is commonly exhibited in the form of an infusion or tincture. This infusion is made of $\frac{1}{4}$ ounce of bruised root to 10 fluid ounces of distilled boiling water. Dose, 1 to 2 fluid ounces. The tincture is composed of $\frac{1}{2}$ ounces of root in coarse powder, and 1 pint of proof spirit. Dose, $\frac{1}{2}$ to 2 fluid drachms.

ARM, arm [Lat. *brachium*], is that part of the upper extremity of the body which extends from the shoulder to the wrist. It consists of two portions—the arm, or *brachium*, properly so called, and the forearm, or *anti-brachium*; the former having one bone—the humerus; the latter two bones—the radius and ulna. (See ANATOMY.)

ARNERRIA, *är-nér'-i-a*, in Bot., a gen. of plants belonging to the nat. ord. *Plumbaginaceæ*. Thrift is the common English name for this genus, which includes many pretty species suitable for growing on rockwork and in pots. The dried flowers of the common thrift, *A. vulgaris*, are diuretic.

Aromatics.

ARMORACIA, ar-mo-rá'-si-a, in Bot., a gen. of plants belonging to the nat. ord. *Cruciferae*. The species *A. rusticana* is cultivated for the sake of the root, which is the common horseradish, so much used as a condiment. The plant is frequently met with, growing wild by the side of ditches and on the banks of rivers; but, from its bearing some resemblance to aconite, the latter has been mistaken for it; and cases of poisoning have occurred in consequence. The roots, however, of horseradish are larger and longer than those of aconite; and when scraped, have a very pungent odour. A volatile oil, resembling oil of mustard, may be obtained from horseradish by distillation, and there can be no doubt that all the valuable properties of the plant depend upon this principle. The odour of the oil is exceedingly powerful, that arising from a single drop being sufficient to fill a whole room. The root is considered to be antiscorbutic, anti-rheumatic, stimulant, diaphoretic, and diuretic, and is frequently used in Medicine. Applied to the skin, it produces vesication. A syrup made with an infusion of the root and sugar has been used, with success, as a remedy for hoarseness, arising from relaxation. Burnett states that horseradish steeped in milk forms one of the best cosmetics. As a dietic, it is used scraped, or in the form of a sauce, with roasted meat and fish. When eaten on an empty stomach, it is deleterious.

ARNICA, *är-ni-kä*, in Bot., a gen. of plants belonging to the nat. ord. *Compositæ*. The most important species is *A. montana*, known by the names of Mountain-tobacco, and German Leopard-bane. It is a perennial herbaceous plant, found growing in the meadows of the middle and south of Europe and also of the western states of North America. The flowers are of a yellow colour, tinged with brown. The whole plant, when fresh, possesses a strong and disagreeable odour and an acrid, bitter taste. All parts of the plant have striking medicinal properties, but the root constitutes the part generally preferred. The preparation known as tincture of Arnica, which is obtained by macerating one ounce of the root with a pint of alcohol, is now largely employed by the public as an external application for bruises and swellings; and notwithstanding the contempt with which its powers have been spoken of by eminent members of the medical profession, it has gradually gained ground among practitioners, and has now obtained a place in the new British Pharmacopœia. The leaves and flowers, though not much used internally in this country, have been occasionally employed as a substitute for Peruvian bark, and are said to have proved beneficial in cases of amanrosis and chronic rheumatism. Preparations of arnica are much used by the homœopathists.

AROMATICS, *a-ro-mat'-iks*, substances, as

Arracacha.

plants, drugs, and medicines, which emit agreeable odours, and are usually characterized by a warm pungent taste. Such are the spices, ginger, cinnamon, pepper, balsams, frankincense, &c. They generally contain a peculiar volatile oil, mixed with resinous substances. The animal kingdom furnishes some aromatics, as ambergris, musk, civet, &c., but they come principally from the vegetable. They are employed in the manufacture of perfumery, and in medicine as antispasmodics, &c.

ARRACACHA, *ar-ru-kā-ka*, in Bot. a gen. of plants belonging to the nat. ord. *Umbellifera*. It includes one species of great importance, namely, *A. esculenta*, a plant much cultivated in the tropical regions of South America for the sake of the root, which is a very valuable article of food. This is about the size of a parsnip, which it somewhat resembles in flavour. It has been recommended as a substitute for the potato, and attempts have been made to cultivate it in Britain, but without any very satisfactory results. The starch obtained by rasping and washing the root is similar to arrowroot.

ARRACK, *är'-räk*, the name given in eastern countries to any kind of ardent spirit, but which is generally understood to apply to a spirit made either from rice or from the juice of a palm-tree. In character it resembles other ardent spirits, but possesses more stimulating and narcotic properties.

Arrowroot, *är'-ro-root*, the name given to various kinds of starch used as food by man. True West Indian arrowroot is obtained from rhizomes or root-stocks of the plant *Moranta arundinacea*, and is one of the purest and best known of the amylaceous substances. It forms a very firm jelly with boiling water, and, thus prepared, is a common article of diet for invalids and children, being nutritious and demulcent. The name arrowroot is derived from the fact of the bruised rhizomes of the plant being employed by the native Indians as an application to the poisons inflicted by arrows. East Indian arrowroot is obtained from the rhizomes of *Curcuma angustifolia*, and is sometimes called curcuma starch. The West Indian plant is, however, cultivated to some extent in the East, and supplies of the true arrowroot are brought from Singapore. Tahitian arrowroot is obtained from the plant named *Tacca oenonica*, and the substance called Portland arrowroot is extracted from the *Arum maculatum*, a common hedgeweed in this country. In all these cases, the fecula consists of starch-grains, which are produced in great quantities, before the season of rest, in the succulent rhizomes or root-stocks of the plants. These grains are separated from the cellular tissue, and certain acrid juices, by a very simple process, which consists simply in washing the grated root-stocks. Arrowroot is frequently adulterated with potato-starch and refined sago-flour, sometimes

Arsenic.

with rice-starch, and the starch of common wheaten flour. The granules of these inferior starches can readily be distinguished under the microscope by their different forms and sizes.

ARSENIC, *är'-sik* [Gr. *arsenikos*]. — The substance which, in commerce, goes by this name is the oxide of the metal arsenic, or arsenious acid. Arsenic was known in different combinations by the ancients, but has only lately been shown to be of metallic origin. It is, however, so unlike a metal in many of its properties, that certain French chemists consider it as belonging to the non-metallic elements. It conducts electricity, and possesses metallic lustre, and is very much allied to phosphorus. Arsenic is prepared in the state of arsenic acid or oxide, by roasting the arsenical sulphide of iron. Metallic arsenic possesses a brilliant grey lustre, which is unmistakably metallic. It may be reduced to powder in a mortar. When heated in close vessels, it sublimes unaltered; but in a current of air, it absorbs oxygen, and burns with a bluish flame, depositing a white mealy powder. A minute quantity of arsenic is added to lead, to diminish its cohesion, during the manufacture of shot. The only important combinations of arsenic are,—*arsenious acid*, AsO_3 ; the white arsenic of the shops; *arsenic of copper*, or Scheele's green; the *Schweinfurth green*, which is a double acetate of arsenic and copper; the *blausphide*, or *realgar*, which is used in pyrotechny; and the *tersulphide*, or *orpiment*, which is the king's yellow of the artist. Arsenic also forms a terhydride with hydrogen, analogous to the ammonia-like compounds formed by antimony and phosphorus. Arsenic forms the connecting link between the non-metallic elements and antimony, which is certainly only a little more metallic than itself. Arsenic is a powerful irritant poison, causing vomiting, purging, and other distressing symptoms. One or two grains may cause death. In medical doses it is alterative, tonic, and antiperiodic; it is also a valuable remedy in diseases of the skin. The principal pharmaceutical preparations of arsenic are:—*Acidum arsenicum*, *arsenious acid*, or *white arsenic*, the dose of which is from $\frac{1}{10}$ to $\frac{1}{2}$ of a grain, in solution. *Liquor arsenicalis*, or *liquor potassum arsenitis*, *arsenical solution*, or *Fowler's solution*; dose, from 2 to 8 minims. *Liq. arsenici hydrochloricus*, hydrochloric solution of arsenic; dose, 2 to 8 minims. *Ferri arsenius*, *arsenite of iron*; dose, $\frac{1}{10}$ to $\frac{1}{2}$ of a grain. *Soda arsenies*, *arsenite of soda*; dose, $\frac{1}{10}$ to $\frac{1}{2}$ of a grain. *Liquor soda arsenatis*, *solution of arsenite of soda*; dose, 5 to 10 minims. In cases of poisoning by arsenic, freshly-precipitated hydrated oxide of iron, or calcined magnesia, should be at once administered. The influence of a minute quantity of arsenic on the human frame is a very curious question. In Styria, it is a common thing for the pea-

Aitanthe.

Sents to take twelve or thirteen grains per day of white arsenic, to improve their wind. They begin by taking a single grain per day, increasing the dose until they arrive at their maximum. It appears to do them no harm, so long as they relinquish the use of it gradually when they reach 50 or 60 years of age. If the doses are discontinued suddenly, death, with all the symptoms of arsenical poisoning, is the result. To prevent accidents from the improper use of arsenic, no druggist or other retailer is allowed to sell arsenic without making an entry of such sale in a book for the purpose, with the name of the person, and the purpose for which it is required. Also, it must first be mixed with siccot or indigo, unless sold in a quantity of not less than ten pounds. The prescriptions of medical men are excepted from the operations of the Act.

ARTANTE, *ar-tan'-the*, in Bot., a gen. of plants belonging to the nat. ord. *Piperaceæ*. The species are natives of the tropical regions of America. The dried leaves of *A. elongata* are much used in medicine. (See MATICO.)

ARTEMISIA, *ar-te-mis'-i-a* [from *Artemis*, one of the names of the goddess Diana], in Bot., a gen. of plants belonging to the nat. ord. *Compositæ*, and comprehending several interesting and valuable species. *A. absinthium*, the common wormwood, is an indigenous perennial, often met with in waste places and by roadsides. The flowers are arranged in globular heads, and are of a buff or yellowish colour, blossoming in August. The principal constituents are a volatile oil, a bitter principle called absinthin, and carbonate of potash. The latter was formerly known as "salt of wormwood;" but it possesses no specific virtue other than belongs to carbonate of potash generally: it is still, however, regarded as a potent remedial agent by the ignorant. The dried herb, or flowering-top, under the name of wormwood, is used as an aromatic bitter tonic, and as an anthelmintic. It is also employed in the preparation of liqueurs. The species *A. abrotanum* is the southernwood, a fragrant plant employed on the Continent in making beer. The anthelmintic known by the names *Semen-scriptii* and *Barbotine*, consists of the flower-heads of *A. carutescens*, a Mediterranean plant. *A. chinensis*, and other species, are stated by Lindley to yield the Moxa of China. (See MOXA.) The substance sold as wormseed, and known under the names of *semen-contra*, *semen-cina*, and *semen-santonicum*, consists of the broken flower-stalks, involucres, and flower-buds of *A. contra*, *pauciflora*, *lercheana*, *sieberi*, and *ciliata*. It is employed as a vermifuge.

ARTERIOTOMY, *ar-te-ri-o'-t-o-me* [Gr. *arteria*, an artery, and *tēmeno*, I cut], is applied to the opening of an artery for the purpose of drawing blood, and is distinguished from phlebotomy, or venesection, which is the

Artichoke.

opening of a vein. In ordinary cases, the latter is always preferable to the former; but sometimes, when it is necessary to take a large quantity of blood from the system very rapidly, as in apoplexy, arteriotomy is adopted, and then it is generally the temporal artery that is selected.

ARTERY, *ar'-te-ri* [Gr. *arē*, air, and *terō*, I keep], is literally an air-duct, and was a name applied by the ancients to certain vessels of the human body, which were believed by them to contain air, from their being found empty after death. The arteries are those vessels which convey the blood from the heart to all parts of the system. They are membranous cylindrical tubes, composed of three coats; viz., the external, which is firm, strong, and elastic; the middle, which is muscular, contractile, and brittle; and the internal, which is brittle, smooth, and transparent, and lined with epithelium on the side washed by the blood. The action of the arteries, called the pulse, corresponds with that of the heart, and is effected by the contraction of their muscular coat and the great elasticity of their outermost one. Besides the arteries which carry the purified blood from the heart to all parts of the body, there is the pulmonary artery, which emerges from the right ventricle of the heart, and carries the impure blood from the heart to the lungs. The other arteries all spring from the aorta. (See ANATOMY.) The arteries are distributed to every part of the system, serving to convey nutrition, to compensate for the waste that is constantly taking place. (See CIRCULATION OF THE BLOOD.) For wounded or cut arteries, see HEMORRHAGE.

ARTHRON, *arth'-ron*, is a Greek word signifying a joint, and, in composition, is used in a number of medical terms: as, *arthrosis*, an articulation; *arthritis*, inflammation of a joint; the gout; *arthrodynia*, pain in a joint; *arthropusia*, a collection of pus in a joint; *arthrodia*, a species of articulation, in which the head of one bone is received into the superficial cavity of another, so as to admit of motion in every direction.

ARTHROPIC, *ar-thro'-pik* [Gr. *arthrosis*, articulation], in Anat., a term applied to a connection of bones, in which the head of one fits into a shallow cavity in another; by which means motion in nearly every direction is admitted of; as, for example, in the joint between the humerus and the scapula.

ARTICHOKE, *ar'-ti-choke* [Fr. *artichaut*].—This delicate esculent is the young succulent receptacle of the flower-head of *Cynara Scolymus*, a perennial plant growing wild in the south of Europe, and extensively cultivated in this country. On the continent the artichoke is frequently eaten raw, with salt, pepper, and oil; but in England it is generally boiled before it is sent to the table. The esculent tubers of a species of sun-

Articulation.

flower, *Helianthus tuberosus*, are known as Jerusalem-artichokes; the term Jerusalem being a corruption of the Italian *girosoli*, "sunflower." (See HELIANTHUS.)

ARTICULATION is the connection of the bones of the skeleton by joints. (See ANATOMY.)

ARTIFICIAL LIMBS, &c., are ingenious mechanical contrivances for supplying substitutes for those limbs, or other organs of the body, which accident or misfortune has removed; such as hands, arms, or legs. The skill of the dentist, or the unerring nicely of calculation required by the operator who fixes in an artificial eye, is rather a surgical operation than an anatomical contrivance; but by artificial limbs is generally meant those combinations of steel framework, screws, springs, cork, leather, caoutchouc, and gutta-percha, which imitate the form, and, to some extent, the motion and practical utility of the real limb. This is an art which has now been brought to a high degree of perfection; and artificial limbs are constructed by which, naturally and with ease, many of the movements of natural limbs are effected. (See Frederick Gray "On Artificial Limbs;" H. Bigg's "Manual of Orthopædy.")

ARTOCARPACE, *ar-to-kar-pai-se-e* [Gr. *artos*, bread, *karpos*, fruit], in Bot., a nat. ord. of dicotyledonous plants, found only in tropical regions, having a milky juice, which contains caoutchouc, or India-rubber, dense heads of unisexual flowers, and, generally, fruits of the sorosis form. The typical genus, *Artocarpus*, or Bread-fruit, includes two very important food-producing trees, namely, *A. incisa* and *A. integrifolia*. The first species is a native of the Moluccas and islands of the Pacific: it yields the nutritious bread-fruit which supplies the place of corn to the natives of the regions in which it flourishes. The bread-fruit tree was introduced by the British government into the West Indies, where it is still cultivated, and whence it has been carried to the American continent. The species *A. integrifolia* yields the Jak, or Jack-fruit, which is largely used as food in Ceylon and some parts of the East.

ARON, *air'-ən* [formerly *aron*, supposed to be an ancient Egyptian word], in Bot., the typical gen. of nat. ord. *Araceae*. The only British species is *A. maculatum*, the common Cuckoo-pint, Wake-Robin, or Lords-and-Ladies, and probably the Long Purple of Shakspeare. This curious perennial is found growing in shady places, hedge-banks, rough grounds, and groves. The flowers, which come to perfection in April and May, are monococious; that is, the sexes are contained in different flowers on the same plant. They are arranged on a succulent axis, terminating in a club-shaped receptacle termed a spadix, of a purple or yellowish-white colour, and enclosed in a mem-

Ascarides.

braious sheath denominated a spathe. The berries are of a fine scarlet colour, and help to adorn our hedges in autumn. They are very poisonous, and the whole plant contains acid and poisonous juices. The tubers, which are filled with starch, are dried, powdered, and used in France as a cosmetic, under the name of cypress powder. The starch, separated from acrid juices, forms Portland arrowroot, which was formerly prepared in large quantities in the island of Portland, where the plant grows in great profusion. In the fresh state, the tubers are stimulant, diaphoretic, and expectorant, and were formerly used in the form of an emulsion in obstinate rheumatism.

ARTENOID CARTILAGES. (See LARYNX.)

ASAFETIDA. (See ASSAFETIDA.)

ASAGREA, *as-a-gre'-a*, in Bot., a gen. of plants belonging to the nat. ord. *Melanthiaceae* or *Colehiaceae*. The most important species is *A. officinalis*, a native of Mexico, and the principal, if not the only source of the *Sabandilla*, *Cevadilla*, or *Orbadilla* of the shops, which consists of the fruits and seeds. The seeds are officinal, and yield the alkaloid veratria, which has been used externally as a rubefacient in rheumatism, gout, and neuralgic affections, and also internally in similar cases, in doses of one-twelfth to one-sixth of a grain. It is a most powerful poison. Sabandilla seeds have been employed as an anthelmintic. They are called *lice-seeds* by the Germans; because, when powdered and employed externally, they destroy vermin.

ASSARUM, *as-a-rum* [Gr. *a*, not, *σαρων*, fomina], in Bot., a gen. of plants belonging to the nat. ord. *Aristolochiaceæ*. The species *A. europæum*, a native of Europe, is a rare plant in the woods of Britain. The root which forms the drug assarabacca contains a camphor-like principle, and a bitter principle called *assarin*, which is combined with gallic acid. It was formerly much employed as an emetic; but has been superseded by specacuanha, which is milder and safer. It is still occasionally used as an erthine,—that is, a medicine to be snuffed up the nose, in headache and ophthalmia, and is supposed to be the chief ingredient in the powder sold as cephalic snuff.

ASCARIDES, *as-kir'-i-dees* [Gr. *askarico*, I jump], parasitic worms which inhabit the intestines of animals. They belong to the genus *Entozoa*, and are ranked in the order of *Nematoidæ*. One of the commonest species, the *A. lumbricoides*, which is very like the common earthworm, is found frequently in the intestines of men, and of horses, oxen, &c. They have been observed fifteen inches in length, and they are often, the cause of severe disease, which has sometimes proved fatal. The *A. vermicularis*, or threadworm, is very common among young children. It is white, about half an inch long, and infests

ASCITES.

The lower part of the intestines in great numbers. (See Thorax.)

Astrome, *ast'-es* [Gr. *astēs*, from *astēs*, a bottle], a term used to denote abdominal dropsy, or dropsy in the belly. (See Diaper.)

Asclepias, *as-kli'-pi-as* [Gr. name of Asclepius, the god of medicine], in Bot., a gen. of plants, the type of the nat. ord. *Asclepiadaceæ*. The common English name for the gen. is Swallow-wort. The species are mostly American, and many of them possess powerful medicinal qualities, as one might expect from the generic name. *A. curassavica*, the bastard peacock-wort, is a native of the West Indian islands, where the root is employed by the negroes as an emetic, and is occasionally sent to England as ipecacuanha. The root of *A. tuberosa* is much esteemed by the American doctors, particularly by those styling themselves eclecticists, as a diaphoretic and expectorant. The last-named plant, which is commonly known as the butterfly-weed or pleurisy-root, is frequently cultivated as an ornamental garden-flower.

Asparagus, *as-pär'-a-gus* [probably from Gr. *aspargo*, I tear], in Bot., a gen. of plants belonging to the nat. ord. *Liliaceæ*, the Lily family. The species are herbaceous, or shrubby plants, growing wild in the southern parts of Europe and in Africa. *A. officinalis*, the common asparagus, has long been cultivated for the sake of the young succulent shoots called *turrs*, which form a much-esteem'd article of food. In the wild state the shoots are slender and tough, but by cultivation they are obtained thick and extremely tender. The ancient Romans were well acquainted with this delicate culinary vegetable; and Pliny mentions a variety which grew near Ravenna, producing shoots so large that three weighed upwards of a pound. It is now cultivated in all the temperate regions of the world, and to a very great extent near London, Paris, and Vienna. In no part of Europe is it grown to such perfection as in the market-gardens round London. There are many local varieties of asparagus, but they may all be regarded as slight modifications of two well-marked sorts, namely, the red-topped and the green-topped. Asparagus-shoots contain a peculiar crystalline principle, to which the name *aspargin* has been given: this has a specific action on the urinary organs, and its properties have caused asparagus to be properly employed as a lithic. In Medicine, the shoots, roots, and flowering stems of *A. officinalis* are occasionally employed as diuretic. The roasted seeds have been used as a substitute for coffee.

Asperula, *as-pe-rū'-la* [diminutive of Lat. *asper*, rough], in Bot., a gen. of plants belonging to the nat. ord. *Guttæceæ*, the Madder family. The species *A. odorata*, the

ASSAFETIDA.

woodruff, is one of the most fragrant plants found in our woods: it contains the natural perfume to which chemists have given the name of coumarin. *A. cyathiformis*, another indigenous species, is commonly called Quince-wort, on account of its supposed value as a remedy in sore throat.

Asphyxia, *as-fik'-sia* [Gr. *a*, not, and *phuseō*, pulsation], literally signifies without pulsation, and is used to denote that state of body during life in which the vital functions are suspended, from some cause interrupting respiration; and hence, to speak correctly, it should be called *apnoea*, [Gr. *a*, not, and *pnoe*, I breathe]. In asphyxia, the action of the lungs is suspended, and the blood no longer undergoes that purifying process so necessary to life. Hence the system becomes filled with impure blood, the powers of sensation and voluntary motion are suspended, and, if the proper means of restoration are not resorted to, death will speedily ensue. Asphyxia may be produced by various causes; as by whatever prevents the access of air to the lungs, as strangulation, drowning, choking, &c.; or whatever interferes with the action of the nerves that are concerned in respiration, as paralysis, cold, stroke of lightning, &c. It may also be produced by breathing an impure or a too rarefied atmosphere. (See DROWNING, HANGING, SUPPURATION, &c.)

Aspidium, *as-pid'-i-um* [Gr. *aspidion*, a little buckler], in Bot., the name of a gen. of ferns. The fronds of the species *A. fragrans* possess aromatic and slightly bitter properties, and have been used as a substitute for tea. The root of the *A. Filix Mas*, or male-shield fern, is strongly recommended as an anthelmintic. Dose, of powder, 60 to 180 grains. The liquid extract is prepared by packing in a percolator 2 pounds of the fern root in coarse powder, and passing through it slowly, 4 pints of ether, or a sufficiency till it passes colourless; then evaporate on a water bath, and preserve the oily extract. Dose, 15 to 30 minims on an empty stomach.

Asplenium, *as-plé'-ni-um* [Gr. *a*, not, *spleen*], in Bot., a gen. of ferns, included in the sub-ord. *Polygonales*. Many species are common in Great Britain, being known as spleen-worts. They were formerly used in medicine, but have now fallen into disuse. *A. ruta-marinæ* is popularly known as wall-rue. *A. trichomanes* is an elegant little fern, common on rocks and old walls. It is often cultivated in cases and on garden rockwork.

ASSAFETIDA or *ASAFOETIDA*, *as-as-fé'-ti-da* [Persian, *asa*; Lat. *faetida*, fetid], the name of a fetid gum-resin, used in medicine on account of its antispasmodic and more or less stimulating properties, and extensively employed in Persia and the adjacent countries as a condiment, just as garlic and other allied plants are employed in Europe. The

Asses' Milk.

umbelliferous plant *Narthex*, or *Ferula asafoetida*, yields the greater part of the asafoetida of commerce, but, in all probability, other species of *Ferula*, and also other plants, yield the drug. Royle suggests that *Francoa pubescens* may be one of the sources. The peculiar, and, to Europeans, offensive odour of asafoetida, is attributed to the presence of sulphur in combination with allyl. (See ALLYL.) In nervous affections, hysteria, convulsions, flatulence, spasmodic asthma, worms, &c., asafoetida is frequently of great service. Dose, from 5 to 20 grains. It is commonly given in the form of tincture or pills. The tincture is formed by macerating 2½ ounces of asafoetida in 1 pint of rectified spirit, dose, from ½ to 1 fluid drachm. The compound pill of A consists of 2 ounces each of asafoetida, galbanum, and myrrh, with 1 ounce by weight of treacle, heated and mixed well together, dose, 5 to 10 grains. The compound A and aloes pill is made by taking 2 ounces each of siccotrine aloes in powder, asafoetida, hard soap in powder, and confection of roses, beat together till thoroughly mixed, dose, 5 to 10 grains. It is also used in the form of ointments.

Asses' Milk is, on account of its nutritious qualities and lightness of digestion, frequently recommended to consumptive patients and delicate young children. It contains more sugar, and less cheesy matter than other milk. It bears a considerable resemblance to human milk, and hence is considered best for a child when the other is not available.

ASSIMILATION, *as-sim'-la-shon* [Lat. *ad-similatio*, from *ad*, to, and *simile*, like], the act of organized bodies, by which they convert foreign substances into their own proper substance, by which food is converted into nutriment. (See NUTRITION.)

ASTHENIA, *as-th'ē-nē-a* [Gr. *a*, not, and *thēnia*, strength], denotes debility or loss of strength, and is employed in connection with diseases of which this is a characteristic.

ASTHMA, *asth'-ma* [Gr. *asthmaso*, I breathe with difficulty], a disease of the lungs, characterized by difficulty of breathing, which comes in paroxysms, accompanied by a wheezing noise and a feeling of tightness across the chest. The fit occurs most frequently during the night, suddenly awaking the patient from sleep, who is obliged to assume an upright posture to prevent suffocation, and to struggle and pant for breath while the paroxysm continues, which is usually for two or three hours, but it may go off in a few minutes, or continue for several days. Though a terrible disease, it is seldom, in itself, a fatal disease. Indeed, unless it be complicated with other diseases of the lungs or heart, asthmatic patients are, as a rule, long lived, which may be owing to the care they are obliged to take

Astragalus.

of themselves. It is frequently hereditary, or it may arise from some inflammatory affection of the respiratory organs. It is due to spasmodic contraction of the circular muscular fibres of the bronchial tubes. Among the other causes that may give rise to it, are dwelling in a moist or impure atmosphere, cold, indigestion, mental anxiety. The paroxysms are generally preceded by languor, flatulency, headache, sickness, a feeling of anxiety, and a sense of tightness and fulness about the chest. Physicians usually distinguish three kinds of asthma,—the humid, dry, and spasmodic, according as they are, or are not, attended with cough and expectoration. During the paroxysms, gentle aperients, and antispasmodic medicines are recommended; and if the stomach be loaded, an emetic. A bluster on the chest, bathing the feet in warm water, a cup of hot coffee, or the smoking of stramonium, are frequently of use. The smoking of *Datura Tatula* is said to give relief in many cases, and the Iodide of Potassium in doses of from 5 to 10 or 15 grains is also recommended. Indian hemp, in doses of from 2 to 4 grains of the extract, will often relieve the spasm. But there is no one remedy for every case, in each that must be selected which is found by experience to afford most relief. To prevent the return of a paroxysm, the exciting causes are to be avoided. This disease seems to depend more upon the stomach than anything else, and hence, the great means to be adopted are dietic. The asthmatic can never, with impunity, eat and drink as other people do. The bowels should be kept gently open, the food be light and nourishing, sudden changes of temperature to be avoided, regular and moderate exercise to be taken, and a change of climate or of situation to be tried. As regards this last, it has been found that some have been least subject to asthma in the country, others in the centre of a town.

ASTRAGALUS, *as-trag'a-lus* [Gr. *astragalos*, a die], is the ankle bone or first bone of the foot, upon which the tibia moves. It is so called from being shaped like the dice used by the ancients in their games.

ASTRAGALUS, in Bot., a gen. of plants belonging to the nat. ord. *Zygophylaceae*, sub-ord. *Papilionaceae*. More than 250 species have been described, and most of these are hairy plants, either shrubby or herbaceous. The best known British species are *A. hypoleucus*, the purple milk vetch, and *A. glycyphyllos*, the liquorice-vetch. The species *A. sericea*, *A. gummifer*, *A. creticus*, and *A. annua*, furnish gum-tragacanth, or, as it is frequently termed in the shops, gum dragon. Tragacanth exudes naturally from all parts of the above plants, or from wounds made in the stems. It is used by British manufacturers for stiffening crapes and other light fabrics, and by the perfumers for making

Astringents.

Bandoline In Medicines it is employed for its demulcent and emollient properties, and as a vehicle for the exhibition of more active substances.

Astringents, *är-st्रin'ëntz* [Lat. *ad*, to, and *stringo*, I tie fast] substances which have the property of contracting or drawing together the muscular fibre or coagulating serous fluids. They are employed medicinally for the purpose of obviating relaxation of the fibres and tissues, to check excessive secretions, and to impart tone to the system, and hence are useful in checking fluxes, hemorrhage, and diarrhoea. The drugs most commonly used as astringents are alum, acetate of lead, sulphate of copper, sulphate of zinc, sulphate of iron, catechu, oak gall, and rhubarb root. Most vegetable astringents contain tannin.

Asylum, *ä-zil'üm* [Gr. *a*, not, and *uloo*, I rob] was formerly used to denote a sanctuary or place of refuge to which criminals might fly for safety, and from wh ch it was considered the greatest impety to take them by force. The term is now commonly applied to certain institutions whose object is to alleviate the condition of the blind, deaf and dumb, lunatic and defective.

Asylums, Lunatic (See LUNATIC ASYLUMS.)

Axilla, *ä-lik'ä* [Gr. *a*, not *inx*, in, order] a term used in Med. to denote want of regularity in the symptoms of a disease or in the functions of the body.

Axæs, in Anat., is the name of the first vertebra, so called either from the Greek verb *axio*, I sustain, or from Atlas who was fabled to support the world upon his shoulders. It differs from the other vertebrae in having its body small and thin, and its foremen very large, being in form somewhat like a ring. It is connected above with the condyles of the occipital bone, and receives the tooth-like process of the second cervical vertebra from below, the former admitting of moving the head up and down, the latter from side to side.

Atmosphere, *ät'mos f're* [Gr. *atmōs*, vapour, and *sphærā*, sphere], the name given to the gaseous envelope of the earth (See AIR). The average pressure of the atmosphere at the sea level is usually taken at 14.6 lb avoirdupois on the square inch, or just sufficient to support a column of mercury 30 inches in height; hence a column of 60 inches will be equal to two atmospheres, a column of 90 three, and so on. It is customary to estimate the force of steam and other fluid pressures by atmospheres;—that is, in round numbers, at the rate of 15 lb per square inch for every atmosphere.

Atomic Theory, Atomic Weights, *ä-tom'ë* &c [Gr. *a*, not, *temna*, I cut]. Every body is supposed to consist of atoms or minute particles which cannot be further subdivided. All the atoms in the same element are

Atomic Theory.

regarded as exactly equal in size and weight, and absolutely alike in all respects. Whenever combination takes place between two elements the union is considered to be between atom and atom. The atoms of elements are simple, those of compounds are compound. No atom has ever been seen, even by the most powerful microscopes, although particles of bodies less than $\frac{1}{100000}$ of an inch in diameter have been discerned by their aid, the forms of atoms are, therefore, unknown. Although the *actual* size and weight of the ultimate atoms of bodies cannot be ascertained, it is easy to discover their *relative* size and weight. For instance, it is found by experiment that one grain of hydrogen combined with 80 grains of bromine to form a definite compound, and never in any other proportion; it is therefore supposed that the *number* of atoms of each body is the same, but that the *weight* of each atom is as 1 to 80. This is borne out by the fact that bromine is exactly 80 times as heavy as hydrogen, a cubic inch of one uniting with exactly one cubic inch of the other. The numbers 1 and 80, therefore, represent the weight of the atoms or the atomic weights of the bodies, and it follows that 81 is the atomic weight of the compound formed by their union. These numbers are also termed the *chemical equivalent* or *combining proportion* of these substances. All the other elements have their *combining proportions* or *atomic weights*, and are subject to the same laws as hydrogen and bromine. It often happens that double, treble, and quadruple atoms of one element will unite with a single atom of another element to form a compound, for instance, the following compounds of nitrogen and oxygen occur:—

Nitrogen,	14 grains,	Oxygen,	8 grains
"	14 "	"	16 "
"	14 "	"	24 "
"	14 "	"	32 "
"	14 "	"	40 "

Here we find one atom of nitrogen uniting with a single, double, treble, quadruple, and quintuple atom of oxygen, and *never in any other proportion*. It has been said above, that the atoms of the same body are of constant size, but it happens in several cases that the atoms of different bodies are of different sizes. Thus, though it is found that one cubic inch of hydrogen unites with one cubic inch of bromine, it by no means follows that equal volumes of carbon and iron unite in chemical combination. There is great diversity in the relative sizes of elementary atoms, those of carbon being only half the size of those of iron. The weight of an atom of carbon would be 6 and that of an atom of iron would be 88, but the quantity of carbon would only take up half the space of the quantity of iron. It has been found that bodies with the same *composing volume* agree strongly in their proper-

Atomic Volume.

ties. Iodine, chlorides, and bromines, are very similar in their reactions; and there are several other groups of elements formed on the same basis. (See ATOMIC VOLUME.) To sum up; atomic weight is the relative weight of the atoms of bodies, or, which is the same thing, the proportion in which they unite. Reasoning on this theory, tables have been constructed of the atomic weights of all the elements, the atomic weights of compounds being evidently the sum of the atomic weights of their constituents. Hydrogen has been taken as the unitary body by English chemists, from being the lightest of all known substances. The continental chemists have taken 100 parts of oxygen as the standard number. This latter arrangement, by increasing the figures in each number, renders it much less convenient to work with the continental than with the English scale. (See CHEMISTRY.)

ATOMIC VOLUME.—Atomic volume is the relative size of the combining proportions or atoms of bodies, just as atomic weight is the relative weight of their combining proportions or atoms. It is determined by dividing the atomic weight by the specific gravity. As before stated (ATOMIC WEIGHT), substances fall into several well-marked groups, possessing analogous properties, and giving isomorphous compounds. The following table will be sufficient to show this fact:—

	Equiv. H=1	Atom. vol.	Sp. Gr.
Cobalt	29.5	44	8.39
Iron	28	44	7.95
Nickel	29.5	44	8.39
Iridium ..	99	57	21.6
Osmium ..	39.6	57	21.8
Platinum ..	98.7	57	21.6
Gold	197	128	19.2
Silver	108	128	10.53
Tellurium ..	64	128	6.25

It has been shown by Kopp that those elements which are isomorphous possess the same atomic size. This is true of numerous isomorphous compounds. Sulphate of magnesia and sulphate of zinc crystallise in the same forms, and have the same atomic size, although the atomic size of magnesium and zinc are different. The mysterious relations existing between the atomic volumes of different compounds and elements has lately received particular attention from many eminent chemists, great light having been thrown on the subject by the researches of Kopp, Schröder, Fehlhol, Playfair, Joule, Gerhardt, and others.

ANONY, dī'-ō-nē [Gr. *a*, not, and *tēsos*, tone], is a term used in Med. to denote deficiency in power or tone, generally applied to muscular power.

ANOREXIA, ā-tro'-ē-si [Gr. *atropos*, the name of one of the Fates], in Bot., a gen. of plants, formerly included in the ord. Solanaceæ, but now regarded as the typical gen. of a nat. ord. to which the name *Atroposace* has been given. The most important species is *A.*

Atrophy.

Zadonna, the common Dulse, or Dulse Nightshade. This plant is native of Greece and Italy, and also indigenous to Britain, but not common. It is perennial, and grows in hedges and waste grounds on a calcareous soil, but is only met with in a comparatively few localities. It blossoms from June to August, the flowers being about an inch long, drooping, bell-shaped, and of a lurid purple colour. The fruit is a berry of a shining violet black colour when ripe, about the size of a small cherry. The berries have a most tempting appearance, and children have frequently been poisoned by them. They are powerfully narcotic; and one of the first symptoms of their deadly action on the human frame is an appearance of the most besotted drunkenness. The dried leaves, or an infusion of the leaves, will act in a similar manner. Even a small dose causes an extravagant delirium, which is usually of an agreeable character. The delirium is sometimes accompanied by excessive and uncontrollable laughter, sometimes by excessive talking, but occasionally by a complete loss of voice. The state of mind sometimes resembles somnambulism, as in the case of a tailor who, for fifteen hours, was speechless and insensible to external objects, and yet went through all the operations of his trade with great vivacity, and moved his lips as if in conversation. Dryness of the mouth and throat, difficulty of swallowing, nausea, dimness of vision, giddiness, coma, are among the other effects of this poison, and death is usually preceded by convulsions and paralysis. The best antidote to the virulent effects of this poison is *rhubarb*, when promptly administered; but, if practicable, the stomach-pump should be at once used. When death ensues from its effects, the body soon putrefies, and swells in a remarkable manner, being covered with livid spots; and blood sometimes exudes from the mouth, nose, and eyes. Extract of belladonna is employed to dilate the pupil of the eye during surgical operations, to allay pain and nervous irritation, and as an antispasmodic, in doses of $\frac{1}{2}$ to 1 grain. It is to be feared that it is a common ingredient in specifics for sparkling eyes sold by perfumers. The active principle of the plant is the allioid *atropine*. (See ATROPIA.)

ATROPHY, ā-trō-fē [Gr. *a*, not, and *trópe*, nourishment], denotes a wasting, from deficient nutrient, either of a part or of the whole body. In order to the maintenance of the healthy state of the body or of any of its organs, a certain supply of nutrition is required to meet the waste that is constantly going on. When, from any cause, the supply of nutrition is not able to meet this waste, the natural dimensions of those parts are reduced. In a healthy condition of body, an exact balance is maintained between the waste and the supply; but in every morbid condition, this balance is more or less dis-

Airopia.

stuffed, in consequence of which the whole body, or certain parts of it, receive too little or too much nourishment. The first state, from whatever cause it arises, is termed atrophy, the latter hypertrophy. Atrophy may thus arise from a vast variety of causes. It may be occasioned by merely withholding the necessary supply of nutritious food, without any actual disease. Among the diseases capable of producing atrophy, the most common are those of the digestive organs, by which the aliment is taken up and prepared for assimilation. Disease of the organs of assimilation may produce atrophy as effectually as disease in the primary organs of digestion. A frequent instance of this is in consumption, when the lungs become so diseased as not to be able to take up a sufficient quantity of air. Atrophy may result also from a want of activity in an organ, or in the whole body; so that when the nutritive particles are conveyed to them in the blood they have not power to appropriate a sufficient quantity of them. When the vital activity of an organ is small, the nutritive particles are taken up slowly and languidly; while the affinity existing between them being also weak, they are sooner removed by the process of absorption than in health, and the parts thus circumstanced are rapidly wasted. Hence a due supply of nervous stimulus is necessary to the vital activity of an organ, while the cessation of action in any organ is invariably followed by atrophy. The first change that takes place in an atrophied organ, from whatever cause, is diminution of the quantity of blood sent to it; and next to this, and chiefly owing to it, is greater paleness of colour. Subsequently, the organization becomes more completely changed, so that frequently all traces of its original conformation are lost and in some cases, it at last disappears altogether. In all cases, atrophy arises from the diminution or perversion of the vital energies generally the former, and hence by exciting the natural vital energies of an organ we tend to remove atrophy. In order to its cure it is necessary to discover in what organ or organs the deficiency or perversion exists, and to adopt the mode of treatment that is considered most adapted thereto. Beyond this, nourishing diet, fresh air, healthful exercise, and, if suitable, cold bathing, are among the means generally adapted to such cases.

AIROPIA, ASSORINA, &c. *pro-m-a*, a vegetable alkaloid found in the deadly nightshade, *Atropa belladonna*. It is extracted by adding sulphuric acid to a strong decoction of the plant, filtering, saturating with potash, and dissolving the precipitate, which is the atropine, in hot water, from which it crystallizes in long silky needles. This being the active principle of belladonna, it possesses the properties of that plant in a high de-

Auranti Cortex.

gree. It is used externally as an anodyne for neuralgic pains, tic doloreux, and to dilate the pupil of the eye. Being a powerful poison, it requires to be used internally with great caution. In doses of $\frac{1}{8}$ to $\frac{1}{4}$ of a grain, it is used as an anodyne and antispasmodic in neuralgia, epilepsy, delirium, spasmodic asthma, &c. (See *Arora*.)

ATTAR, or OROS, or ROSES, &c. *tar*, an essential oil obtained from the petals of three species of rose—namely *Rosa centifolia*, *mossata*, and *damascena*. The rose gardens at Ghazzeopore have long been famous for the production of the precious liquid. These gardens are large fields planted with rows of small rose bushes. The blossoms, which unfold in the morning, are all gathered before noon, and their petals are at once transferred to clay stills, and distilled with twice their weight of water. The rose water which comes over is placed in shallow vessels covered with moist muslin, to exclude dust and exposed all night to the cool air. In the morning, the thin film of oil which has collected on the top is carefully swept off with a feather, and transferred to a small phial. This process is repeated morning after morning, till nearly the whole of the oil is separated from the water. Hezel says that about 200 roses are required to yield a rupee weight (176 grains) of attar, and this quantity is worth £10. Attar of roses is imported from Smyrna and Constantinople, but it rarely, if ever, arrives in this country pure.

AUDITORIA, or ATOES in Anat., is a term applied to certain parts of the organ of hearing, as the auditory nerve, meatus auditorius, &c. (See *Lan*.)

AURANTIACEAE *aw-en-tie-uh-se-ee* in Bot. The Orange family a nat ord of dicotylous plants consisting of trees and shrubs often of great beauty. The order is included in the sub class *Thalamiflorae*. There are twenty-three genera and about fifty-five species, chiefly natives of the East Indies, but generally distributed by the agency of man throughout the warmer regions of the globe. Their flowers are regular and usually odorous, their fruits succulent and sub acid. The plants abound in receptacles containing essential oils, which are much used in perfumery, for flavouring, and for other purposes. The oils are especially abundant in the leaves, the petals, and the rind of the fruit. The latter also contains a bitter tonic principle. The edible fruits known as the orange, lemon, lime, shaddock, citron, pampelmoose, forbidden fruit, Indian bacal, and wamppee-fruit are the produce of this order.

AURANTI Cortex, or Orange Peel. —The rind of the bitter orange is used in various pharmaceutical preparations as an agreeable stomachic, but more frequently merely to impart an agreeable flavour to otherwise disagreeable or tasteless draughts. Its

Auricles.

principal forms are infusion, tincture, syrup, and wine.

AURICLES., *aw'-ri-kles*, the name given to two of the cavities of the heart. (*See HEART.*)

AURICULATE., *aw-rik'-u-lat* [Lat. *auricula*, little ear], in Bot., a term applied to a leaf having two small ear-like lobes at the base. The leaf of the Woody Nightshade, *Solanum dulcamara*, is an example.

AURASSE, *aw'-ras* [Lat. *auris*, the ear], is a term applied to one who studies and professes to cure diseases of the ear.

AURUM. (*See GOLD.*)

AURUM POTABLE, *po-ta-bl'-e-le*.—If ether is added to a solution of terchloride of gold, it abstracts the whole of the salt from the water, and floats upon the top in a yellow layer. This compound, which is simply a solution of terchlorido of gold in ether, was formerly used medicinally under the above name.

AUSCULTATION, *aw-kul-to'-shon* [Lat. *auscultare*, to listen], in Mod., is a term applied to the method of ascertaining the healthy or diseased state of certain organs, by attending to the sounds which they produce, either on being struck, or in the natural performance of their functions. In a stricter sense, the term auscultation is confined to the latter of these cases, the former being termed percussion. Auscultation then is the art of distinguishing diseases by listening to internal sounds; and is either immediate or direct, by the unassisted ear, or modiate, by means of instruments. This is one of the most important discoveries of modern medical science; for, though Hippocrates gives directions how, by auscultation, fluids are to be detected in the thorax, yet the subject seems to have attracted no attention for many centuries. In 1761, Leopold Avenbrugger, a physician of Vienna, published a small volume in Latin, entitled, *Inventum novum ex percussione thoracis humani, ut signo obstrusorum interni pectoris morbos detectendi*. The work, however, excited little notice till it was translated into French, in 1808, by Corvisart. Soon after this the practice of percussion became general in France and other parts, and was attended with results far more precise and certain than had been anticipated. In 1816 the subject received an immense impetus from Laennec's invention of the stethoscope. (*See STETHOSCOPE.*) Auscultation is chiefly valuable as throwing light upon the diseases of the organs of circulation and respiration in the chest. By carefully studying the varieties of sound (often extremely slight) produced by the organs in health and disease, the skilful physician is able to judge of the condition of these organs with the greatest accuracy, and thus detect and adopt the best means of arresting incipient disease.

AVA, *a'-va*, an intoxicating liquor used by the South Sea islanders. It is also known under the names of Cava and Arva. In

Avena.

Tahiti, the use of it is said to have swept off many of the inhabitants. In the Tonga islands it is prepared and drunk on every festive occasion; and in the Feejee Islands the preparation of the king's morning drink of ava is one of the most solemn and important duties of the courtiers. The liquor is prepared by a very disgusting process from the root of the intoxicating long-pepper shrub, the *Macropiper methysticum* of botanists. The root, either fresh or dried, having been scraped clean and cut into small pieces, is handed to the ava-makers, who at once commence to chew it with great formality. The pulp thus obtained is thrown into a bowl and mixed with cold water. After this mass has stood for a little while, the liquor is strained from the chewed fibre through cocoanut husks, and is then ready for use.

AVENA, *av-e-na*, in Bot., the Oat, a gen. of grasses; nat. ord. *Gramineae*. *A. sativa* is the botanical name for the common oat, many varieties of which are cultivated in the north of Europe for the grains. Oats are extensively used as food for man and domestic animals. When deprived of the husks, and coarsely ground, they form oatmeal. When merely divested of their integuments, they are called groats; and these when crushed constitute Emblemen and prepared groats. The oat is a much hardier plant than either wheat or barley, and ripens in colder latitudes, hence it is very extensively cultivated in Scotland, where the best oats are grown. Oatmeal is well adapted for human food, and is usually eaten in the form of cakes or porridge. It is, however, better suited for those who have active exercise in the open air than for persons in sedentary employments, being less easily digested than the preparations of wheat. Oats are also employed for the production of alcohol. The recent experiments of Professor Buckman, of the Royal Agricultural College, show that the cultivated varieties of the oat are derived from the wild oat, *A. fatua*. This parent species attains the height of from three to five feet, and is a mischievous weed in corn-fields. The seeds are covered with stiff bristles of a brown colour, and each is furnished with a long bent awn. Professor Buckman collected some of these seeds, and in the following spring commenced the cultivation of the wild oat in the experimental plots of the Royal Agricultural College. Year by year the seeds were saved, and the interesting transformation of a weed into a productive cereal grass was traced through all its successive stages. In the first year, a lighter-coloured frut was obtained; in the second, the fruit exhibited a less degree of hairiness; in the third, a greenish, straight, and slender awn took the place of the black rigid one, bent at right angles, which characterizes the wild plant; in the fourth,

Axil.

The fruits were much more plump, owing to the greater development of grain. In the fifth year, the ripe fruit separated from the floral envelope less readily than in the case of *A. fargesii*. These changes were reported in 1855, and the professor was encouraged to continue his experiments for a few more seasons. Accordingly, in the spring of 1856, seed, the produce of the preceding year, was sown in a prepared bed, and the result was a large admixture of two forms or types of crop oats, one with the flowers all round the stem,—the potato oat form of the farmers and the other with the flowers all drooping to one side—the so-called *Tartarian oat*. Since then Professor Buchman has grown the two sorts so derived in the field and with a gradual improvement in point of productiveness and weight per bushel. The same acute observer has lately watched the production of wild oats as a gradual degeneration from cultivated ones. The hairy seeds of the wild oat are sometimes used by anglers instead of artificial flies.—(See Buckman on "Oats," in "Popular Science Review.")

Axit. AXILLARY, *axill-* [Lat. *axilla* arm pit]—In Bot. the upper angle formed by the leaf with the stem is called the *axil* and everything arising at that point is said to be *axillary*. Buds are usually axillary. Any thing springing from the stem either above or below the axil is *extra axillary*; if above, it may be described as *epiaxillary* below, as *infra-axillary*.

AXILLA, *axil lula* [Lat.] is applied in Anat. to that cavity under the upper part of the arm called the armpit. Hence the term axillary is applied to the arteries, veins, glands, &c., of this part.

AXALPA, *a-xal-pa le-a* [Gr. *axaleos*, dry wind—the habitat of the plant] in Bot. a genus of plants belonging to the nat. ord. *Euphorbiaceae* sub-ord. *Zygoideales* and consisting of shrubs remarkable for the bltn. and fragrance of their flowers. Many of the species are extensively cultivated as ornamental plants; of these the most common is *A. paniculata*, a shrub from three to five feet high with orange red, or nearly white flowers. It is a native of the countries around the Black Sea, growing luxuriantly on the mountain-slopes and often giving great brilliancy to the landscape. The whole plant is narcotic, and Trichlorid honey owes its poisonous properties to the bees feeding on the flowers. The poisonous honey mentioned by Xenophont in his account of the "Recess of the Ten Thousand," was of a like nature. Some of the finest species in cultivation are natives of North America of these, the most deserving of notice are *A. sandwicensis*, called, on account of its sweet odour, the upright honeysuckle, and *A. cassia*, which, with *A. paniculata*, have become the parents of numerous beautiful hybrids. The delicate azaleas of the greenhouse, &

Bacon.

indica, is as its name implies, a native of India. This species has lately met with a rival in *A. Loddigesia* an evergreen, which has been brought to this country from China. The azaleas are closely allied to the rhododendrons.

Azota, *a' zote* [Gr. *a*, not, *zoe*, life], the old name for nitrogen. Nitrogen was so called from being destructive to life; but as numerous other gases have the same properties the word has been almost given up by English chemists, except in such words as *azotized azobenzole*, &c. The French, however, still use *azote*, *azotique* *oxoate*, &c., for nitrogen, nitric acid and nitrate.

Azygos *az' e gos* [Gr. *a* not and *sager*, a voice] in Anat. is applied to certain parts of the human body that have no "sake or fellow"—that, in other words, are single.

B

BACCA or BERRY, *bä' kə* in Bot., a many-seeded pulpy fruit *inferior* (adherent to the style) and *indehiscent* (not opening to allow the seeds to escape). Examples may be found in the gooseberry and currant. The fruit of the grape is called a *meconium* but it only differs from the bacon in being *superior* (free from the style). The name bacon is applied by some botanists to any fruit of a pulpy nature.

BACK *bäk* [Ang. *baek*], is that portion of the human body which extends from the neck to the loins and includes the dorsal vertebral, the posterior portions of the ribs, and the muscles and skin pertaining thereto. Pains in the back may proceed from a variety of causes as rheumatism an affection of the spine inflammation of the muscles disease of the kidneys, &c. In each case the treatment will depend upon the nature or seat of the disease. Pain in the lumbar region, or small of the back, frequently proceeds from Lumbago. (*See LUMBAGO*)

BACON, *ba' kon* [Sav. *bacun*, to bake or Ger. *baech* a wild sow] salted and dried pork, made from the sides and belly of a pig. The process of curing is effected by impregnating the flesh with salt, and allowing it to remain in the brine for some time. It is then taken out, dried, and smoked. Bacon hams are the cured hind legs. The working classes of England are more particular about the quality of the bacon they consume and give a higher price for it than the working classes of any other nation. When properly cooked bacon forms an excellent and wholesome article of food. York, Hants, Berks, and Wilts, are the counties most celebrated for bacon and ham in England, and Dumfries, Wigton, and Kirkcudbright, in Scotland. Bacon is largely im-

Bael

ported into this country from the United States and the Hainan islands.

BALZ, or **BELA**, is the name given to the dried half-ripe fruit of the *Aegle Marmelos*, a native of Malabar and Cochin. The fruit is roundish, about the size of a large orange, with a hard woody rind, and is usually imported in dried slices or fragments. This medicine has only lately been introduced into this country, and is strongly recommended as an astringent in chronic diarrhoea, and English cholera. It is given in the form of liquid extract, in doses of from 1 to 2 fluid drachms.

BALINEE BEI KANG [Sax. *bæcer*] — This term is applicable to almost any process of drying or hardening by heat, but is commonly restricted to the mode of cooking food in a heated chamber or oven. For making bread, baking is resorted to by almost every section of the human race. It is also a common mode of dressing animal food, but is less effective than roasting, unless it be carried on in ovens through which air is allowed to pass freely. In reviewing the different modes of cooking meat, Mr. Lowes says, "Baking excites some unpleasing influence on the meat which renders it both less agreeable and less digestible. Those who have travelled in Germany, and France must have repeatedly marvelled at the singular uniformity in the flavour, or want of it, in our various roasts," served up at the *table d'hôte*. The general explanation is, that the German and French meat is easily inferior in quality to that of England and Holland owing to inferiority of pasture, and doubtless, this is one cause, but it is not the chief cause. The meat is inferior but the cooking is mainly at fault. The meat is scarcely ever *roasted* because there is no coal, and fire wood is expensive; the meat is therefore *baked*, and the consequence of this baking is, that no meat is eatable or eaten with its own gravy, but is always accompanied by some sauce, more or less piquant. The Germans generally believe that in England we eat our beef and mutton almost raw, they shudder at our gravy, as if it were so much blood. I have ascertained that it is really the cooking, and not the meat, which is in fault, for at the tables of great people, or resident English, when meat is served, the flavour is excellent" — "Physiology of Common Life." Meat cooked in the improved ventilating ovens which have lately been introduced, has all the sapidity and digestibility of roast meat, in fact, the mode of cooking by means of such ovens is now generally distinguished as *oven roasting* — See Mrs. Beeton's "Household Management."

BALNEAS, bald'nes [Ang. -Sax.], the loss of hair on a portion or over the whole head. It sometimes occurs in early age, but generally it takes place in old age. It frequently also occurs after febrile or other

Balsamodendron.

severe illnesses. It is caused by an atrophy of the follicles on which the hairs depend for nutrition, and generally concentrates on the crown of the head. Many nostrums are recommended for the cure of baldness, but they are seldom attended with any good result, and frequently do harm. The means to be employed are such as tend to increase the circulation in the scalp to greater activity, as frequent rubbing with a hard towel or hair brush and the application of stimulants, as Spanish fly ointment. Frequent shoving of the head, and the temporary use of a wig, will often remove baldness.

BALK (See MELISSA.)

PILM or GILAAD (See BALSAMODENDRON.)

BALNUM (See BATHS.)

BALSAM, *bawl' sam* [Gr. *balsamon*], a name formerly given to almost every oily or resinous substance exuding from trees, but now used by scientific men to denote a vegetable product containing either benzoin or camphor acid. The true balsams are much used in medicine on account of their stimulating, expectorant, and tonic properties. The most important are the balsams of Peru and Tolu (see *MIXOCEPHRUM*), benzoin (see *IVYAS*), storax and gum wax (see *LACURAMBLE*). All those substances are very fragrant. They vary much in their consistency. Thus benzoin is solid, hard, and brittle; Peruvian balsam is fluid, and tolu is intermediate being a very soft and readily fusible solid. Copalva commonly called balsam copalva, is not a true balsam, but belongs to the class of oleo resins. The same may be said of Canada balsam. Several medicinal mixtures in which oils enter are commonly included under the head of balsams. Thus the preparation known as balsam of sulphur, used as an application to foul ulcers consists simply of flowers of sulphur in olive oil.

BALSAMODENDRON, *bal'-so mo don'-dron*, in Bot. an important gen. of plants belonging to the nat. ord. *Anacardaceæ*. The species are native of the East, and are remarkable for the odorous gum resins which exude from their trunks. *B. myrrha* a small tree growing in the north-eastern parts of Africa, and in the adjoining parts of Arabia, is believed to be the principal, if not the only source of the fragrant gum resin known in commerce under the name of *myrrh*. It is at first soft, oily, and of a yellowish-white colour, on exposure to the air, it soon acquires the consistency of butter, and in time becomes much harder and changes to a reddish hue. Medicinally, myrrh is regarded as a tonic, stimulant, expectorant, and anti-spasmodic, when taken internally, as an external application, it is astringent and stimulant. It is usually given in the form of tincture, of $\frac{1}{2}$ ounce to 1 pint of rectified spirits, in doses of $\frac{1}{2}$ to 1 fluid drachm. It is frequently given also in combination with other substances, tonic or purgative,

Banana.

as iron, aloes, *sesafetida*, rhubarb, &c.; and is an ingredient of the incense burnt in Roman Catholic chapels, and of some kinds of pastilles which are used for fumigation. The substance called *Balm of Gilead*, or *Balm of Mecca*, and which is supposed to be the *balm* of the Old Testament, is said to be procured from *B. gileadense*; some authors, however, name *B. opobalsamum* as its source. This substance was, in ancient times, regarded as a cure for almost every disease; but it is seldom used at the present day. The gum-resin, known as *Indian balsam*, or *false myrrh*, and supposed to be identical with the *balsam* of Scripture, is probably the produce of two species of this genus; namely, *B. mukul* and *B. pulicaria*. It is the *googul* or *guggur* of the Beloochees, and the *mouli* of the Persians. It is very similar to myrrh. *African balsam*, another of the gum-resins of commerce, is said to be an exudation of the species *B. Africana*.

BANANA. (See *MUSA*.)

BANDAGE, bind'-age [Fr.], in Surg., is a piece of linen, calico, or flannel, used in binding up a wounded limb, or to retain dressings upon wounds, to give support to certain parts, or to keep deranged parts in a natural condition. Bandages are of various kinds, according to the purpose they are intended to serve. The most common form is a long strip of stout calico, varying in breadth from two to six or eight inches. Previous to its application it is rolled up, for more convenient handling, and hence it is commonly termed a *roller*. There are also the T-bandage, so called from its resemblance to the letter T; the 18, or many-tailed bandage, composed of one longitudinal piece, with a number of transverse pieces, or tails, to fold over the injured part; the suspensory bandage, &c. Much frequently depends upon the proper use and application of a bandage. The great object is to give equal and uniform pressure to the part, and to adjust it so that it may not be displaced or deranged by any movement of the patient. Care should also be taken not to put it on too tight, so as to stop circulation in the part, or do harm in any other way. "The firmness and neatness of a bandage," says Mr. John Bell, "depend altogether upon these two points: first, upon the turns succeeding each other in a regular proportion; and, secondly, upon making several (i.e. turning the roller in the hand, and laying it upon the limb with the opposite flat side towards it) whenever you find any slackness likely to arise from the varying forms of the limb." Of late years, elastic bandages have been much used. Flannel bandages are used where warmth as well as support is required.

BANDOLINE, or FIXAFIX, *band'-do-jeen*, a preparation sold by perfumers, and much used by ladies for stiffening and fixing the hair. It is merely a thick mucilage, obtained either from Carrageen moss or gum-

Barclay's Antibilious Pills.

tragacanth, scented with *cassia* *de Cologno* or other perfumed spirit. A very delicate bandoline may be prepared by soaking quince-seeds in cold water for a day or two, and then straining the mucilage.

BANEERRY, *baun'-ber-e*, in Bot., a name given to a species of *Actaea*, the root of which is sometimes used medicinally, on account of its antispasmodic, expectorant, and astringent properties. It is a perennial herbaceous plant, from one to two feet high, with tripartite leaves, the leaflets of which are deeply cut and serrated. The flowers are in racemes; the berries are black and poisonous. This plant, *A. spicata*, is also known by the name of *Herb Christopher*. It belongs to the nat. ord. *Euanthaceae*.

BAPTISTA, *bap'-ti'-i-a*, in Bot., a gen. of plants belonging to the nat. ord. *Leguminosae*, sub-ord. *Fabionaceae*. The species are numerous, and chiefly natives of North America. *B. tinctoria* is the wild indigo of the United States, yielding a blue dye, resembling, but much inferior to, indigo. This plant is used medicinally; the root and herbage being stated to possess antiseptic, sub-astringent, cathartic, and emetic properties.

BARBADOS LRG. (See *ELEPHANTIASIS*.)

BARBER CHIRURGEON, *bar'-ber-chir'-ur-jon*, was, in former times, the designation under which the distinct and not very similar occupations of barber and surgeon were carried on. In England, a company was formed under this name in 1308, and the London company was first incorporated by Edward IV., in 1461. Afterwards, a voluntary association was formed by certain persons, for the practice of surgery; but by 32 Henry VIII. c. 42, 1540, these two bodies were united into one body corporate, under the name of the Barbers and Surgeons of London. This act, however, also separated the two crafts, declaring that "No person using any shaving or barbary in London shall occupy any surgery, letting of blood, or other matter, except only drawing of teeth," and surgeons were strictly prohibited from exercising "the feast or craft of barbary or shaving." Four governors or masters, two of them surgeons and two barbers, were to be chosen, who were to see that the spirit of the act was observed. This company continued to exist till the incorporation was dissolved by 1st Geo. II. c. 15, and the barbers and surgeons of London formed into two distinct corporations. The barber-chirurgeon's sign, which is still retained, consisted of a striped pole from which was suspended a basin; the fillet round the pole indicating the ribbon or bandage twisted round the arm previous to blood-letting, and the basin the vessel for receiving the blood.

BARBERY. (See *BRAZIL*.)

BARCLAY'S ANTIBILIOUS PILLS are composed of colocynth 120 grains, extract of

Barilla.

jalap 60 grains, almond soap 30 grains, guaiacum 30 grains, emetic tartar 8 grains, essential oil of juniper, caraway, and rosemary, each 4 drops, made into a mass with a sufficient quantity of syrup of buckthorn, and divided into 64 pills.

BARILLA, *ba-ri'-la* [Sp.], the commercial name applied to the impure soda-ash procured by calcining various species of *Salsola*, *Salsoritis*, *Cheiranthus*, and *Atriplex*. The plants grow near the sea, in salt marshes, and are extensively cultivated in Spain, Sicily, and the Canary Islands. The seed is sown at the end of the year, and the plants are gathered towards the end of autumn, dried, and burned. Barilla is a grey semi-fused mass of ashes, and contains about 30 per cent. of carbonate of soda. (*See Soda.*)

BARIUM, *bair'-i-um*, atomic weight 68.5, symbol Ba, in Chem., the metallic base of the alkaline earth *baryta*. This metal was discovered by Davy in 1800, and was named *baryta*, from the Greek word *barys*, heavy, on account of the excessive density of its compounds. Its specific gravity is above 2. It is a white, slightly malleable metal, decomposing water at ordinary temperatures. It quickly tarnishes in the air, from the absorption of oxygen. When moderately heated, it burns with a deep-red flame. It forms two oxides,—the protoxide acid, BaO , and the peroxide, BaO_2 : the former only forms salt.

BARYTUM, CHLORIDE OF, in Chem., made by dissolving carbonate of baryta in hydrochloric acid, evaporating and crystallizing. It is a colourless salt, crystallizing in flat four-sided tables, and dissolving in three parts of cold and two parts of hot water. Its solution forms the usual test for sulphuric acid, which it indicates by forming a white precipitate insoluble in nitric acid. In Medicine it is used both externally and internally as an irritant stimulant, and deobstruent in scrofula, glandular swellings and skin diseases. Internally it is generally given in the form of solution, 1 ounce of the chloride to 10 fluid ounces of distilled water in doses of 8 to 10 drops. In large doses this is an active irritant poison, the best antidote for which is sulphate of soda or sulphate of magnesia.

BARK, *bark* [Dan.], in Bot., the external coating of an exogenous or dicotyledonous stem and its branches. It presents three distinct layers, independently of the epidermis which is common to it, with other external parts of the plant. These three layers, proceeding from within outwards, are known as the *inner*, or *tissue bark*; the *cellular envelope*, or *green layer*; and the *suberous*, or *corky layer*. Some botanists apply to these three layers, respectively, the Greek terms, *endophloium*, *meseophloium*, and *epiphloium*. The bark is connected organically with the wood by means of the

Barometer.

medullary rays and cambium-layer. It develops in an opposite direction to that of the wood; for while the latter increases by additions to the outer surface, the bark increases by additions to the inner. There are several kinds of bark which are largely used for medicines. These will be found noticed in separate articles, under the botanical names of the genera which include the plants producing them. For oak-bark and quercitron-bark (see *Quercus*); Peruvian bark (see *Cinchona*); cabbage-bark, Surinam bark (see *Andira*); Cascara-bark (see *Cascara*); wild-cherry bark (see *Cherasma*.)

BARLEY. (*See Hordeum.*)

BAROLITE, *ba-lo'-o-lit* [Gr. *barys*, heavy, *lithos*, stone], carbonate of baryta, or whitrite. (*See BARYTA, CARBONATE OF.*)

BAROMETER, *ba-rom'-e-ter* [Gr. *barys*, weight, *metron*, a measure], an instrument for measuring the weight or pressure of the atmosphere. It may be said to be the invention of Torricelli, who first demonstrated the existence of the atmospheric pressure by means of a column of mercury contained in a glass tube, but the practical application of this, as the means of determining the weight of the atmosphere, is more particularly owing to Pascal. The principle of the barometer is very simple. It consists of a glass tube about 30 inches in length, sealed at one end, and filled with mercury. This is inverted in a cistern containing the same fluid, when the mercury in the tube falls so as to correspond with the amount of atmospheric pressure on the metal in the cistern, and rises or falls in proportion to the degree of this pressure. This siphon barometer has in place of the cistern the open end of the tube bent upwards and exposed to atmospheric pressure. For indicating good and bad weather, the wheel barometer, invented by Hook, has long been used, but it is a very imperfect instrument. It is merely a siphon barometer connected with a needle, which moves round a graduated circle. In the shorter leg of the siphon a float is placed, which rises and falls with the mercury. A string attached to this float passes round a pulley, to which the needle is fixed, and at the other end there is a small weight, somewhat lighter than the float. When the pressure varies, the float sinks or rises, and moves the needle round to the corresponding points on the scale. The words *rain*, *foul*, *variable*, &c., generally appear on the graduated circle; but they do not always afford reliable indications of the weather. As a rule, a falling barometer prognosticates rain; a rising barometer, fair weather. When the column of mercury is unsteady, it indicates an unsettled condition of the atmosphere; a steady barometer indicates that the weather at the time will last. If the mercury be low, the weather will remain

Baroms.

bed, if the mercury be high, the weather will continue fair. A sudden falling of the barometer almost invariably presages a storm. The connection between the variations of the weather and the pressure of the atmosphere is however, a subject very ill understood. For determining altitude, the barometer is an invaluable instrument. In ascending mountains the mercury is found to sink about a tenth of an inch in 100 feet, so that, if the mercury fall an inch, we have ascended near 100 feet but this is subject to variations from change of temperature and other causes, which render various corrections necessary. There are many forms of the mercurial barometer, but they are all modifications of the siphon or the cistern. The *mercurial barometer* is an instrument used for determining the variations of atmospheric pressure, without the aid of a liquid, as is ordinary barometers. Its action depends on the principle, that if a very thin metallic tube be coiled, any internal pressure on its sides tends to uncoil it, and any external pressure to coil it still more. The instrument essentially consists of a thin metallic tube, curved so as to form about seven-eighths of a circle. This tube, being exhausted of air and hermetically closed is fixed by its middle so that whenever the atmospheric pressure diminishes it uncoils, and, on the other hand whenever the pressure increases it contracts.

BAROSA, *bō'zō mā*, in Bot., a gen. of plants belonging to the nat. ord. *Euphorbiaceæ*. The leaves of several species, such as *B. betulina*, *crepulaea*, and *seriifolia*, are used in medicine for their aromatic, stimulant, antispasmodic, and diuretic properties. They seem also to have a specific influence over the urinary organs. The plants yielding them are natives of the Cape of Good Hope. In commerce they are known as *Buchu* leaves, and are thus named in the British Pharmacopœia. They contain a peculiar bitter principle called *Dioscorea* or *Barosin*, and a powerfully scented volatile oil. The infusion of Buchu leaves, made from $\frac{1}{2}$ ounces of the bruised leaves, and $\frac{1}{2}$ fluid ounces of distilled boiling water, is given in doses of 1 to 4 fluid ounces, the tincture, $\frac{1}{2}$ ounces of these leaves to 1 pint of rectified spirit, in doses of 1 to 2 fluid drachms.

BARTSIA or BARTES, *bārt'sē* f. [Gr. *barts* heavy], in Chem., one of the alkaline earths, discovered by Scheele in 1774. It is met with, combined with sulphuric acid, in *cassiterite*, and combined with carbonic acid in *willemite*. It may be formed by decomposing the nitrate by a red heat; and is very similar in its properties to caustic lime. It is greyish white, becomes hot when heated with water, falling to a fine white powder forming the hydrate. Its specific gravity is 5.4. It has an extremely acrid caustic taste. The carbonate and all

Baths and Bathing.

the soluble salts are powerful eructive poisons. The best antidote is sulphate of soda or magnesia. (See *BARTHM.*)

BASE, *bās* [Lat. *bās*, a foundation], in Chem., a term applied to those bodies which unite with acids or halogens to form salts or bodies analogous thereto. The basic property of an element is not absolute, but only relative, as the same body may act as a base or an acid with a different element. Thus we find chromium acting as a base in the form of sesquioxide, but as an acid in the form of tetroxide or chromic acid.

BASILICUM or *ba'zil'ikōn* [Gr. *bāsilikos*, royal, or of great virtue], in Phar., the name sometimes given to an ointment, composed of 2 parts resin 4 parts of simple ointment and 1 part yellow wax. It is much used as a stimulant dressing to foul or indolent ulcers, with a view to keep up the discharge, and as a vehicle for other stimulating substances, such as resin and Spanish flies. It is called *Unguentum Eriana* or *Ceratum Renna* in the Pharmacopœia. Formerly basilicon was prepared with yellow wax, pitch, resin, and olive oil, and was once named *Unguentum Tetrapharmacum*, "the ointment with four drugs."

BASSORI GUM *bās'ōrī* gūm or a whitish or yellowish substance brought from the neighbourhood of Bassori. It differs from most gums in being nearly soluble in water. The plant yielding it is believed to be a species of *Mimosa*. It contains a peculiar principle, called *Bassorin*, which also exists in gum-acaith.

BATHES AND BATHING, *bāth*—Bathing, in its most general acceptation denotes the application to the surface of the body, or a part of it, of a medium, different or of a different temperature from that by which it is usually surrounded. The substance which constitutes this medium is in Med language termed a bath. Baths are of various kinds, and are distinguished according to the substances of which they are composed, as water, vapour, air, sand, according to their temperature, as cold, tepid, hot, according to their mode of application, as plunge, shower, douche, according as they are general or partial, natural or artificial. Undoubtedly the custom of bathing dates from the earliest existence of the human race. At first they would use such natural baths as the rivers or seas afforded, but doubtless, in no long time, they came to employ artificial ones, and we find the warm bath mentioned as early as the time of Homer. Afterwards both public and private baths came to be common among the Greeks, but we know little of their construction and arrangements. It was not until the reign of Augustus that the public baths at Rome came to assume that magnificence and splendour which afterwards characterised them. They were termed *thermae* or hot baths; but they also contained cold baths.

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In the latter period of the Empire, Rome contained an immense number of baths, in various parts of the city. Different authors reckon upwards of 600 of them; but the most celebrated of them were those of Agrippa, Antoninus, Caracalla, Diocletian, Domitian, Nero, and Titus. Those of Diocletian are said to have been capable of accommodating 1,200 bathers. The vestiges of these buildings that are still to be seen indicate the great magnificence of the original structures. The Turkish bath of the present day is essentially that of the ancient Romans.

The *Harem*, or Turkish bath, as it exists in Constantinople, is described by Dr. W. J. Brasmus Wilson, in his work entitled "The Eastorn or Turkish Bath." The essential apartments are three in number,—a great hall or *mustabi*, a middle, and an inner chamber. The *mustabi* is a large circular or octagonal hall, perhaps a hundred feet high, with domed roof open in the centre. In the middle of the floor is a basin of water, with a fountain playing in the centre, and around it are plants and trellises. Around the circumference of this hall is a low platform, from four to twelve feet in breadth, and three feet high, divided by dwarf balustrades into small compartments. These compartments are the dressing-rooms; and each of them contains one or more couches, shaped somewhat like a straddling letter W, the angles being adapted to the bends of the body. The bather here disrobes and assumes the bathing-garb, a long Turkish towel being wound turban-wise round his head. When he is ready, two attendants place wooden pattens on his feet, and lead him into the middle apartment. This second chamber is low, dark, and small, and feels warm, without being hot or oppressive; and the air is moistened with a thin vapour. It is paved with white marble, and a platform eighteen inches high occupies its two sides; while the space between serves as a passage from the *mustabi* to the inner hall. A matress and cushion are laid on the marble platform; and here the bather reclines, smoking his chibouque, sipping his coffee, and conversing in subdued and measured tones with his neighbour. Here the bather courts a natural and gentle flow of perspiration; and to this end are adopted the warm temperature, the bath coverings, the hot coffee, and the tranquil rest. After a time the bath-attendant arrives; and, if he finds the skin sufficiently moist and softened, the bather is again taken and ushered into the third or inner apartment. The temperature of this apartment is considerably higher than that of the middle room. The atmosphere is filled with curling mists of gauzy and mottled vapour, the steam being raised by throwing water on the floor. In the middle of this apartment is an extensive platform of marble slabs; and on this the bather is laid on his back,

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his scarf being placed beneath him to protect his skin from the heated marble, and the napkin that served as a turban being rolled up as a pillow under his head. Here he is subjected to a process of shampooing; his muscles being pressed and squeezed, his joints being forcibly bent in all directions, and stretched until they snap. After the shampooing, the bather is brought to the side of the hall, around which are placed marble basins about two feet in diameter, suppliant, by means of tape, with hot and cold water, and is made to sit on a board near to one of these basins. The attendant draws on a camel's-hair glove. "He stands over you, you bend down to him, and he commences from the nape of the neck in long sweeps down the back till he has started the skin; he coaxes it into rolls, keeping them in and up till within his hand they gather volume and length; he then successively strikes and brushes them away, and they fall right and left as if split from a dish of macaroni. The dead matter which will accumulate in a week forms, when dry, a ball of the size of the fist." In the course of his frictions he pours water from the basin over the skin to rinse off the impurities. The body is then thoroughly soaped and washed twice over from head to foot; and, as a *coup de grâce*, a bowl of water is dashed over the entire body. The wet clothes are then removed, and an attendant approaches with warm napkins, which supply their place. The bather is then conducted to the outer hall, or *mustabi*, where he stretches himself on the couch of repose. Coffee is poured out and presented, the pipe follows, and, if so disposed, he may have sherbet or fruit, or even a meal. The lunch is twice changed; and, when the cooling process is complete, "the body has come forth shining as alabaster, fragrant as the cistus, sleek as satin, and soft as velvet. The touch of the skin is electric." The process of bathing, as practised by the Turks, thus consists of five distinct processes. There is—1, the seasoning of the body in the outer chamber, by which the skin becomes warm, soft, and moist; 2, the shampooing, or manipulation of the muscles; 3, the rubbing up and removal of the surface-layer of the scarf-skin; 4, the soaping and rinsing; and 5, the process of cooling and drying, which takes place in the outer hall. The Egyptian bath is an offshoot of the Turkish, and the process, though somewhat different, preserves the general characteristics of the parent. A full description of it is given by Lane, in his "Account of the Manners and Customs of the Modern Egyptians." The Russian bath is well described by Kohl, in his account of Russia. Bathing, besides serving the great ends of bodily cleanliness and comfort, is a very important agent in the preservation and restoration of health. The most common

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medium employed in bathing is water, at different degrees of temperature, from 35° up to about 112° Fahr. Baths are divided into different kinds, according to their temperature. The simplest division is into cold and hot; including in the former all that communicate a sensation of cold, and in the latter a sensation of heat to the body. This last, however, is very variable, differing in different individuals at the same time, and in the same individual at different times, but, in most cases, it will be found to be between 84° and 88° Fahr. On entering a cold bath a healthy person feels a sensation of cold, accompanied by a slight shuddering and if the change is considerable, a shock, the skin becomes pale and contracted and the respiration hurried and irregular. In a few seconds the colour and warmth return to the skin, and a glow is diffused over the whole body. If the person remains more than ten or twelve minutes, the glow disappears, and it is succeeded by a general feeling of chilliness. As the great object of cold bathing is to produce this glow, the bather should always leave the water before it goes off. Hence cold bathing always does harm when the powers of the body are too languid to bring on a reaction, and the chilling effects remain unopposed. In the same way, it is not proper to bathe while the body is in a chilled state, or exhausted by bodily or mental exertion, as in these cases a reaction is doubtful. When one is strong and in health, the morning, before breakfast, is the best time for bathing; but, for weak and delicate persons, the best time is about noon. If one feels cold, languid, and drowsy after bathing, it is an indication that it does not agree with him, and it would be well for him to resort to the tepid bath for some time, until the vigour of his constitution is in some measure restored. Delicate persons should make a shorter stay in the bath than others. No one should bathe immediately after a full meal. Cold bathing is particularly valuable in all cases of great nervous irritability and sensibility accompanied with general debility. In cases of weakness of the limbs, torpor, and loss of power, it is also of much service. The tepid bath, which is intermediate between the cold and hot, and may be said to include the highest degrees of the one and the lowest degrees of the other, ranges from about 85° to 94° . The difference between it and the general temperature of the body is so small that it can exert but a slight effect upon the circulation. Its influence is quietly confined to the skin, which it softens and cleanses, and promotes insensible perspiration. It is very soothing and salutary when the skin is dry or parched, and is sometimes had recourse to in cases of fever. It is also used as preparatory to the cold bath in persons of delicate constitution. The warm or hot bath

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ranges from 94° up to about 112° , but generally not above 98° or 100° ; or, more properly, the warm bath ranges from 94° to 98° , and the hot bath from 98° to 112° . The primary effect of a warm bath is to stimulate and enliven, the circulation and respiration are quickened, and the surface of the body expands. Gradually, however, the pulse becomes fuller and slower, the energy of the muscles disappears, and the tendency to sleep succeeds. It is of great use in alleviating local or general irritation, and is much resorted to in spasmodic and convulsive diseases. It is had recourse to in the case of weak and irritable constitutions, which could not support the shock of cold immersion. It ought however to be employed as a remedial agent only, as it is too energizing for ordinary use. It may be prolonged so as to produce fainting, which is sometimes done in order to relax the tension of muscles and sinews, for the reduction of dislocations, opening of constricted passages, and such like. The vapour bath is the most powerful means of applying a great heat to the surface of the body. It directs the blood more speedily to the surface, and being followed by a more profuse respiration, it is more powerful than the hot bath. It is employed as a remedy in gout and rheumatism, and in some chronic affections of the nervous system and organs of respiration. Vapour baths are much used in the East and in Russia, and they have recently been introduced into this country. The following has been recommended as a cheap and easy way of obtaining a vapour bath. A pretty large iron brick is made red hot and then laid on in iron tongs supported on short feet. Over this is to be placed a wooden chair, on which the person who is to take the bath is seated. A four leaved screen covered with painted canvas or cloths is then put round him and a blanket or thick cloth thrown over the top so as to convert it into a small chamber. The person being provided with a small jug or watering pan of hot water, pours the water slowly over the red-hot brick, which being immediately converted into steam fills the inclosure, and induces a profuse perspiration. *Medicated baths*—Although it is certain that the most important effects of baths depend upon their temperature, yet it cannot be doubted, in comparing the effects of a bath of simple water with those of mineral waters, or of the sea, that the chemical components of the materials used in bathing are of considerable importance. Sea waters and mineral waters, particularly such as contain sea-salt or iron in solution, are more tonic, stimulant, and bracing than simple water. Hence, when the object is to strengthen and brace the system, as is almost always the object of cold bathing, sea water is to be preferred to fresh, and if this cannot be procured,

Battley's Sedative Solution.

the water, where practicable, should be rendered artificially saline by the addition of common salt. The beneficial effects of certain substances when thus way mixed with the water in bathing, have led to the introduction of what are termed medicated baths. Baths of this kind are partly imitations of natural mineral waters and partly other remedial mixtures. The substances thus mixed with the water are to some extent, absorbed by the skin, and thus carried into the system. These may be of various kinds—mineral, as salt, potash, sulphur, iron, &c., vegetable, as wine, vinegar, balsam, or animal, as milk. In the case also of vapour baths, medicaments are sometimes added with good effect—as sulphur, mercury, &c.—Partial baths are such as are applied only to a part of the body, and they are, of course, of various kinds their number being limited only by the number of parts of the body to which water can be locally applied. The *Shower bath* differs from the ordinary plunge bath, in that the water comes from above, and falls principally on the head and shoulders. The shock in this shower bath is greater than that obtained from simple immersion, more particularly if the quantity of water is great, its temperature low, and its fall considerable. In certain affections, particularly those connected with the head, this form of bath has decided advantages over every other, from the refrigeration being applied directly, and in the first place, to the head. It is sometimes of advantage in the shower bath to have the feet in warm water during the process.—The *douché* or dash bath consists of a small stream of water directed with considerable force, mainly upon some particular part of the body. It varies in power according to the diameter of the stream, the temperature of the water, and the force with which it is directed on the body. This is perhaps, the most powerful of all refrigerants, owing to the violent and rapid change of the parts of the fluid applied to the part, and to the compression upon the capillaries produced by the mechanical impulse of the stream. (See HYDROPATHY.)

BATTLEY'S SEDATIVE SOLUTION, *Liquor opii sedativus*, is a preparation of opium introduced by Mr. Battley, and long esteemed as an opiate more certain and less disagreeable in its effects than most others. It is merely a strong aqueous solution of opium resembling the *Extractum opii liquidum* of the British Pharmacopœia. The dose is from 5 to 30 minims.

BAUDINIA, how *baudinæ* (so named by Plinius, in honour of the brothers Bauhin, botanists of the 16th century), in Bot., a genus of plants belonging to the nat ord *Lecythidaceæ*, sub-ord. *Cecropiinae*. The species are natives of the warmer regions of both hemispheres. Most of them are

Beard.

twinning plants, which stretch from tree to tree in tropical forests, like living cables; but a few are small trees, with erect self-sustaining stems. The genus contains several very useful species. Thus *B. pentandra*, *racemosa*, and *vulgaris* yield tough fibres, employed for making ropes, *B. robusta* and *emarginata* each produce a kind of gum, *B. coriacea* has an astringent bark used in medicine, and for tanning and dyeing leather, the buds and dried flowers of *B. tomentosa* are also astringent, and are much employed by the Indian doctors in dysenteric affections. The snake-rod of *Aesculus* is said to have had its origin in a portion of the stem of *B. vanderwolfii*, which had twined around a smaller stem.

BAY (See LAUREL.)

BAYDBERRY (See MIRTIC.)

BALI SALT *bali salt*, coarse salt obtained by the evaporation of sea water in large tanks, or *bays*, as they are technically termed.

BALIUM (See BALSAMOFENDRON.)

BALERS, *bechers* [Ger. *becher*]—Glass vessels of a cylindrical shape, well annealed, and perfectly even in their substance, used by chemists for boiling or heating solutions. They should be very thin, and without any *particular mark*, or inequality at the bottom.

BALAN, *bean* [Sax.], the common name for several leguminous plants yielding pulse. These will be described under the names of the genera to which they belong, thus, for Calabrian bean, see *Phaseolus* (see also LIMA.)

BALM BIREY (See ARCTOSTAPHYLOS.)

BALM OR GREASE a commodity which its name implies is made from the fat of boars, and is one of the most nourishing things it is possible to obtain for the hair. It is so scarce, however, in this country, that most of those pomades which are so tastefully done up for sale by London perfumers and others, consist mostly of beef marrow, hog's lard, or calves' fat, nitric ether, essence of ambergris, &c. The fictitious bear's grease is thus composed, according to the best receipts.—Washed hog's lard, 1 lb.; flowers of benzoin, $\frac{1}{4}$ oz., and balsam of Peru, $\frac{1}{4}$ or $\frac{1}{2}$ oz. Mix together, pour off the clear portion and stir until nearly cold.

BAZAD, *beard* [Ang.-Sax.], the hair growing upon the chin, and other adjoining parts of the face, in man, and sometimes, though very rarely, in women. It is thicker than the hair of the head, and longer, when suffered to grow, than the hair on the other parts of the body. It is usually of the same colour as the hair of the head, but always the same as that of the eyebrows. The beard is most abundant among those of the Caucasian race, and many persons, natives of Africa, America, and Australia, have little or no beard. The beard was held in great estimation among the Jews, as it is until the present day among the Arabians. "By the beard of Aaron," or "By the beard of the Prophet."

Beaver Tree.

is looked on as the most solemn oath of a Jew or a Mahomedan. Nearly all the Eastern peoples prided themselves upon the fashion and form of their beards, and we have it expressly on record, that the Assyrians and Persians indulged in very long beards. Among the Greeks, and especially among the Greek philosophers, this ornament was held in high estimation. Athenaeus tells us that the Greeks wore the beard until the time of Alexander the Great who ordered his Macedonian soldiery to shave it off, lest the growth of it might give a ready handle to their enemies in battle. Philosophers have nearly always affected the beard as a mark of gravity, and even venerableness and Strabo tells us that the Gymnosophists of India wore it long. The Romans wore the beard until the 5th century A.D., when Publius Titinius Mona brought over a colony of barbers from Sicily to excuse their profession on the Roman chain. Augustus and the Roman emperors till Hadrian shaved their beards, and Plutarch says that Hadrian allowed his to grow to hide the sores on his face. All the imperial personages after Hadrian grew their beards. The Lombards (or Longbards) the early French the ancient Britons and the Anglo-Saxons after they conquered Britain nourished the growth of their beards with peculiar care. When Duke William conquered England he insisted rigorously upon carrying out the Norman custom of shaving and he thus constrained many of the high spirited Normans rather to abandon their country than their whiskers. But by and by they got the advantage of their rivals' conquerors and the higher classes indulged in the luxury of the entire beard from the reign of Edward III, down to the time of Charles II. In the reign of Charles II the entire face was often shaved, sometimes a slight moustache was tolerated and sometimes the whisker or hair on the cheeks was grown. During the last fifty years, growing the whole beard has become very common in most European nations. First the practice began in the parts army then it extended to Italy then to Germany, then to Spain and Russia and lastly, to England where the beard is now very common. What ever opinion may be entertained as to the advantages or disadvantages of the beard there can be no doubt that it forms a most valuable protection to the throat and lungs and should be cultivated by all in whom those organs are delicate or susceptible. To stone masons and others who are much in an atmosphere charged with dust or particles of foreign matter, the moustache serves to prevent these getting access to the lungs.

BEAVER TREE (See MAGNOlia.)

BEGONIA, or BEGONIA, an alkaloid discovered by Dr Bodie, of Denmark, in 1834, in the bark of the boeben tree (*Nectandra Med.*). When dry, it is a white, amorphous,

Beeswax.

inodorous powder, very soluble in alcohol, less so in ether, and very sparingly in water. It is commonly administered in the form of the sulphate, which very much resembles the sulphate of quinine in its action and uses, and has been recommended as a cheap substitute for it, but it is less powerful. It is tonic antiperiodic, and febrifuge, and is given in doses of from 1 to 10 grains.

BETHLEM, bed *lie*, a corruption of Bethlehem the name of a religious house in St George's Fields, London, which, after the dissolution of the religious houses by Henry VIII, was converted into an hospital for lunatics, but still retained its former name.

BED SORES no sores which form on different parts of the body of a person when long confined to bed particularly if unable to shift his posture occasionally. They are especially apt to occur during fevers and other diseases in which the patient is much debilitated. The parts first appear red and inflamed then rapidly ulcerate or slough. In order to prevent this, means should be taken to ease the parts most likely to be affected by means of small pillows, cushions, and the like and to shift the patient frequently. The hydrostatic or water bed now much recommended for invalids serves to prevent the weight of the body from pressing too much on any one part. A simple dressing of ointment of resin is the best application to the sores.

BEEF (See FALUS)

BEEF (See Food)

BEEF, *beef to*, a light soup or broth made from ox flesh. In all preparations I set up the raw meat I will be put into cold water which should be very gradually brought to the boiling point. By this means the juice of the flesh is extracted from the first moment and with the lactic and phosphoric acids two of the principal components of the substance. The beef method of preparing beef is to take finely chopped raw beef as lean as possible and allow it to soak for ten minutes or more in its own weight of cold water then heat it gradually to boiling. After boiling for two or three minutes, it should be strained through a cloth and the fibrous portion exposed to pressure. When properly seasoned it makes one of the very best soups that can be made.—(See Mrs Beeton's "Book of Household Management".)

BEEF (See also PORTER)

BEESWAX, *bees' wax*.—This substance has been investigated by numerous chemists. It appears from the researches of Brodie, that wax is a true animal secretion, i.e. bees fed on sugar only continue to deposit it in large quantities. At ordinary temperatures, beeswax is a tough, solid, yellow substance having a specific gravity of 1.06, and fusing at about 145°. Wax consists chemically of myricine, insoluble in boiling alcohol, cerme, a crystalline substance, dis-

Beg.

solved by boiling alcohol; and carboline, which is dissolved in cold alcohol (See *Carna*)

BEGONIA (See *Begna*)

BEGONIA, *be-go'nia* a (so named after Michel Bégon, a French botanist), in Bot., the typical gen. of the nat. ord. *Begoniaceæ*. The species are natives of tropical regions, but many are now cultivated as ornamental plants throughout Europe. The leaves are oblique or unequal (more developed on one side of the midrib than on the other), and are often richly tinged with crimson. The flowers are of a delicate pink colour, and grow in cymes. The young stems and leaves of the species *B. Malabarica* and *tuberosa* are used as potherbs in the countries where they grow wild. The Begonia family is reputed, generally, to possess astringent and bitter qualities, and occasionally to be purgative.

BELL (See *BAILL*)

BELLADONNA (See *ATROPIA*)

BELLIS *bel'lis*, in Bot., the Daisy, a gen. of plants belonging to the nat. ord. *Compositæ* sub ord. *Corymbiferae*. The receptacle is without scales, and upon it are arranged two kinds of flowers—ligulate, or strap shaped, and tubular. The ligulate flowers which are white in the common daisy, form the eye or outer circle. They have no stamens, but each has a single pistil, which at the top, divides it into two branches forming a stigma. The yellow tubular flowers clustered together within the ray are hermaphrodite, that is to say, they have both stamens and pistils. The involucel is composed of two rows of bracts. The fruit, found at the base of every little flower, whether ligulate or tubular, is without a papus and contains a single seed. The best known species is *B. perennis* the common daisy. The roots of this are perennial, the leaves are above its spatulate, single, ribbed, craggy, and dentate. It blossoms nearly all the year round and is constantly found with opened flowers from March to October. The leaves and flowers are rather acid, and were formerly applied to wounds, but are now disused.

BELLY (See *ABDOMEN*)

BENZAMIN, GUM (See *BENZOIN*)

BENZOIC ACID, *ben'zo'ic* (C_6H_5COOH) — An acid obtained from gum benzoin. It is also found in the balsams of Tolu and Peru, in storax, and in the urine of herbivorous animals. It is easily prepared by sublimation. Benzoic acid forms white glistening needles, having an agreeable aromatic odour, and a hot, bitter taste. It melts at 24° , sublimes at 22° , and boils at 46° . Its vapour may be kindled, burning with a smoky flame. It dissolves in 100 pds. of cold water and 25 of hot. It is readily soluble in ether and alcohol. It combines with the alkalies, earths, and metallic oxides, forming benzoates. It forms sulpho, nitro-, and (chloro) benzoic, by the substitution of atoms

Berberis.

of sulphuric acid, peroxide of nitrogen, and chlorine, for atoms of hydrogen. Its other compounds are too numerous and unimportant for mention here. Benzoe acid is stimulant and expectorant, and occasionally given for coughs and shortness of breath, in doses of 10 to 15 grains, but it is chiefly used as an ingredient in parotitic (*Tumores compophæ compositæ*). The other preparations in which it exists are *Ammonium benzoat*, and *Tinctura opii ammoniata*.

BENZOIN, or **GUM BENZAMIN**, *ben'zo'in*, or *benzoin*, a fragrant balsam obtained from the Benjamin tree (See *STYXAX*). It exudes from incisions in the bark, and soon hardens by exposure to the air. Two kinds are distinguished in commerce by the names of *Siam* and *Sematia benzoin*. The former is most esteemed in England. Benzoin is used in medicine as a stimulant expectorant. It is however principally employed for the preparation of *benzoic acid*, and as an ingredient in the incense used in Greek and Roman Catholic churches. It is also an ingredient in fumigating pastilles and court plasters. The agreeable odour produced by burning benzoin is due to the evolution of the vapour of *benzoic acid*.

BENZOLE benzole (C_6H_6) — A hypocarbon of considerable importance derived from coal-tar. It was first obtained by Faraday from a liquid produced by compressing oil gas and was called by him *bicarburetted hydrogen*. Mitscherlich afterwards obtained it from benzoic acid, and, latterly, Mansfield has procured it in large quantities from coal naphtha and gas liquor. It is a limp, volatile colourless and mobile liquid, with a peculiar odour, having a specific gravity of 0.85 and boiling at 177° . Exposed to a temperature of 32° it condenses into crystalline masses, which melt at 40° . It is insoluble in water, but dissolves freely in alcohol, ether, and oil of turpentine. It is greatly used in the arts, being an excellent solvent for India rubber, pitch, pitch wax, camphor and fat. The property of dissolving fats and oils, added to its great volatility, renders it very useful for removing grease stains from articles of dress. It is sold for this purpose under the name of "benzene collas" at about three or four times its real value. Benzole is also known as *benzene* and *phenæ*.

BERBERIS, *ber'beris* in Bot., the typical gen. of the nat. ord. *Berberidaceæ*, consisting of numerous species, found in temperate climates in most parts, except Australia. These are shrubs, often spiny, with yellow flowers and acid berries. The three whorls of organs in the flower are each made up of six parts; thus, there are six sepals in the calyx, six petals in the corolla, and six stamens. The latter are remarkable for their irritability, for if touched at the base by an insect, or even with the point of a pin, they start up from their natural reclining posi-

Bergamot, Oil of

tion, and close upon the pistil. The most interesting species is *B. vulgaris*, the common barberry, which is usually a bush from four to six feet high, but which, in Italy, sometimes becomes as large as a plum-tree. It is a very ornamental plant, especially when covered with fruit. The berries are of an oval shape, and, when ripe, generally of a bright-red colour, but sometimes whitish, yellow, or almost black. They are very acid, and not fit to be eaten raw; but when boiled with sugar, they form a most refreshing preserve. The bark and stem are very astringent, and yield a bright yellow dye. Of the numerous species of *Berberis* which are cultivated in Britain as ornamental shrubs, the finest is undoubtedly *B. cristata*, the bristle-leaved barberry. This is a hardy evergreen, producing excellent fruit. It is a native of Nepal, and was introduced into this country about fifty years ago.

Benzacot, Oil or Essence of, *ber'-ya-mot*, a fragrant essential oil, obtained by expression or distillation from the rind of the Bergamot orange. (See Citrus.) It is extensively employed in perfumery for scenting pomades, and as an ingredient in most compound essences, such as *au de Cologne*, *au de millifleur*, and Jockey-club bouquet.

Berinessi, ber'-e-bee'-e.—A disease common in Ceylon and other parts of the East Indies, characterized by difficulty in breathing, weakness, stiffness, and a sensation of numbness in the lower limbs, a bloated appearance of the face, and dropical swelling of the whole body. The disease commonly comes on slowly, and terminates in the course of three or four weeks; but sometimes it attacks suddenly, and destroys the patient in from six to thirty hours. The causes of this disease are not well understood. It is generally supposed to arise from exposure to cold damp air, and the want of stimulating and nourishing diet. Great difference of opinion also exists as to the best mode of treating this disease: some regard it as a disease of debility, and consequently have recourse to stimulants; others consider it to arise from increased internal action, and resort to blood-letting, purgatives, diuretics, &c. This latter mode appears to be that most generally recommended. The chronic paralytic affection termed *barbiers*, also common in India, was, until recently, confounded with this acute disease. *Barbiers* is a disease of nervous debility, and therefore to be treated with tonics, cordials, and nutritive diet. It commences with weakness, trembling, and a prickling sensation of the legs, thighs, and arms. Loss of appetite, indigestion, and emaciation soon follow, and at length, if the disease continues, the muscles become paralysed.

Berry. (See *Bacca*.)

Beta, be'-ta, in Bot., the Beet, a gen. of plants belonging to the nat. ord. Chenop-

Betula.

daceæ, and characterized by a five-cleft perianth, five stamens inserted on a fleshy ring surrounding the ovary, and the fruit adhering to the calyx, and collected in clusters of two or three. The species are found in Europe, the north of Africa, and the western parts of Asia. *B. vulgaris*, the common beet, grows along the whole coast of the Mediterranean, and is cultivated in European gardens for its sweet, tender, and dark-red root, which is chiefly used in England as a salad, but in France and Germany as a common table vegetable. It is also cultivated on a large scale in many parts of the world as a source of sugar; and it is believed that at the present time about 400,000,000 lb. of beetroot sugar are annually produced in Europe. The beet used for this purpose is considered to be a variety of *B. vulgaris*, and is known as the sugar-beet. The mangold-wurzel, so valuable as a field-crop for feeding cattle, is another variety, and is distinguished by botanists as *B. vulgaris*, var. *campesaria*. The white beet cultivated in gardens for the sake of its leaves, which are used as a substitute for spinach, is merely a variety of the same plant.

Betel, be'-tel.—The name usually given to a narcotic masticatory, used by the Malays and other Eastern races. It is prepared by rolling up long pieces of the betel-nut (see Areca) in the leaves of the betel-pepper (see Chavica), previously dusted on one side with the quicklime of calcined shells. When chewed, the betel promotes the flow of saliva, and lessens the perspiration from the skin. It stains the mouth, teeth, and lips red; an effect which, though disgusting to Europeans, is considered ornamental by the natives. It imparts an agreeable odour to the breath, and is supposed to fasten the teeth, cleanse the gums, and cool the mouth. The juice is generally swallowed. To one not accustomed to betel-chewing, the nut is powerfully astringent in the mouth and throat, while the quicklime often removes the skin and deadens the sense of taste. After a while it causes great giddiness. On those accustomed to use it, however, the betel produces weak, but continuous and sustained, exhilarating effects; and that these are of a most agreeable kind may be inferred from the very extended area over which the practice of betel-chewing prevails. Prof. Johnston estimates that betel is chewed by probably not less than fifty millions of men.—(See "Chemistry of Common Life.")

Betula, bet'-u-Ja, in Bot., the Birch, a gen. of trees or shrubs belonging to the nat. ord. Betulaceæ. With the exception of *B. antarctica*, an evergreen shrub found in Terra del Fuego, all the species flourish beyond the tropic in the northern hemisphere. *B. allea*, the common birch, is one of the most beautiful of our forest trees, and is found in most of the northern parts of Europe and

Beverage.

Asia. The leaves are small, of an ovate-triangular shape, and doubly serrated. The bark is smooth and silvery white, and the outer layers are thrown off as the trunk increases in diameter. This tree yields useful timber for turnery, &c., and the bark is valuable as a dye-stuff. The outer layers yield an oil which is much prized by the tanner; it is this which gives Russia leather its peculiar odour. In the spring the sap of the birch contains much sugar, and forms, when fresh, an agreeable beverage; when fermented, it constitutes what is called birch wine, a liquor employed medicinally in domestic practice for stone and gravel.

BEVERAGES, *bev'-er-až* [Ital. *beveragio*], a term applied to all liquids which are used either to quench the thirst, stimulate the stomach, or cause a healthy internal action. There are various kinds of beverages; such as cooling, refreshing, tonic, stimulating, &c.

BEZOAR STONES, *be-zor'* [Persian, *pa-zahar*, antidot. to poison], concretions found in the stomachs of various animals. They are brittle egg-shaped masses, about the size of a small walnut, and are mostly dark olive in colour. On being cut open they present the appearance of a nucleus surrounded by concentric deposits. They occur principally in the stomachs of oriental goats, deer, and antelopes, and were formerly looked upon as possessing supernatural properties. They cured all diseases, and acted as antidotes against every poison; and were so much sought after as to be worth ten times their weight in gold. The most valued of these was obtained from the wild goat of Persia, and was called the *Lapis Bezoar Orientalis*. They are found, more or less, in all herbivora, and sometimes occur in the stomachs of persons living much on furnaceous food. They contain lithocistic acid.

Bi, *bi* [Lat. *bi*, twice], a syllable signifying twice or double, and used as a prefix in certain compound names; as *biceps*, two-headed; *bicuspid*, two-pointed; *bi-carbonate*, a carbonate with two equivalents of carbonic acid to one of base.

BIASICO ACID, *bi-bid'-ik*, in Chem., an acid which requires two equivalents of a protoxide of a base to form a neutral salt, such as the pyrophosphoric, lactic, and malic acids.

BICAPSULAR, *bi-kap'-su-lur* [Lat. *bi*, twice, *capsula*, a capsule], in Bot., having two capsules containing seeds to each flower.

BICEPS, *bi-seps* [Lat. *bi*, twice, *capi*, a head], in Anat., is a common name applied to several muscles of the human body, from their having two distinct origins or heads. The principal of these are the *biceps flexor brachii* and the *biceps flexor cubiti*, the former situated on the hind part of the thigh, the latter on the fore part of the os humeri.

BICHROMATE, *bi-kro'-mat* [Lat. *bi*, and *chroma*, a colour], is a term sometimes applied in

Bile.

Anat. to the hyoid bone, from its having two processes like horns. Formerly, it was also applied to muscles that had two terminations.

BICUSPIFIDS, or **BICUSPIDATE**, *bi-kus'-pida* [Lat. *bi*, and *cuspis*, a spear], in Anat., is applied to the two first pairs of molar teeth in each jaw, from their having two spear-like tubercles.

BIENNIAL, *bi-eñ'-ni-al* [Lat. *bi*, twice, *annus*, year], in Bot., a term applied to a plant which springs from the seed one year, but does not flower and seed until the second year, when it perishes. The biennial root is commonly enlarged at the close of the first season by an accumulation of nutriment intended for the support of the plant during its flowering and fruiting. The carrot or the turnip is a familiar example of such a root.

BIXXII. (*Ses ACONITUM.*)

BILBERRY. (*New VACCINIUM.*)

BILE, *bile* [Lat. *bile*, said to be from *bi* twice and *le* strife, from the idea that strife or contentiousness was owing to a superabundance of bile], is a peculiar oily fluid secreted from the venous blood by the liver. It is separated from the blood of the portal vein by the primary coils of the liver, and these discharge it into small ducts which unite to form larger ones, terminating in the ductus communis choledochus, whence it is conveyed into the duodenum. It then mixes with the digested food, and performs the important office of fitting it for absorption into the system. The bile thus mixed with the elements of nutrition becomes in part also absorbed; the excrementitious portion passing out of the body with the other indigestible materials, and imparting their peculiar colour to them. When digestion is not going on the bile ascends through the cystic duct to the gall-bladder, where it is stored for future use. The principal use of the bile is to separate the chyle from the chymo. It also aids in exciting the peristaltic motion of the intestines, thus causing them to evacuate their contents sooner than they would otherwise do, and hence when there is a deficiency of bile the bowels are usually very torpid. Bile differs to some extent in nature and chemical composition in different animals. Human bile is a viscid andropy fluid, of a greenish or brownish yellow colour, a disagreeable odour, and a bitter nauseous taste. When poured into water it sinks to the bottom, and does not mingle readily with it unless agitated or stirred, and then it becomes frothy like a solution of soap. According to Boerhaave its constituent are in 1,000, water 994.4, biline (with fat and colouring principles) 30, mucus (cluedy from the gall-bladder) 3, salts 2.6. The able researches of Strecktor have shown that bile is principally a combination of two peculiar resinous acids with sodium. One of these is termed cholic or glycocholic

Biliary Calculi.

acid, a compound of cholic acid or cholic acid and glycoline; the other choleic or taurocholic acid, a compound of cholic acid with taurin. Cholesterol is also a constituent of healthy bile, although the proportion does not exceed 1 in 10,000, according to *Serzelius*. Small quantities of various fatty bodies, chlorides, phosphate, iron, and manganese also occur. Besides these substances a peculiar colouring matter is found in combination with an alkaline base, the composition of which is not settled. The bile, like the other normal secretions, is liable to alteration in its constituents in disease. The solid constituents of the bile are commonly increased in abdominal and heart diseases when the motion of the blood in the larger veins is impeded; in severe inflammatory affections again it is commonly found to be poor in solid constituents. When, owing to some functional derangement, the bile is absorbed into the blood, and carried through the system, it imparts a yellow tinge to the skin, producing the disease known as jaundice (which *see*). When from a torpid or diseased state of the liver the process of secretion is imperfectly carried on the person is said to be bilious. The secretion of bile is increased by rich abundant good spice, alcoholic liquor, heat, indolaceous, mercury, rhubarb, taxaxacum, &c.; and is diminished by light spare diet, active exercise, early rising, temperate atmosphere, &c. (See LIVER, BILIUS.)

BILIARY CALCULI [Lat. *calculus*, a small stone]—These are sometimes called gall-stones, and are often found in the human gall-bladder in large quantities. They are either semi-transparent and crystalline, or strongly coloured with the bile. They mostly consist of cholesterol deposited on a nucleus of phosphate of lime. (See CALCULUS.)

BILIARY DUCTS, *bil'y-a-re*, in Anat., are those ducts or canals which convey the bile from the liver to the duodenum. (See LIVER.)

BILIUS, *bil'y-us*, is a general term applied to any complaint proceeding from the bile. It is often indiscriminately used by patients for any derangement of the digestive organs; but though these often proceed from the bile, they do not always do so. (See DYSPARESIA.) Rhous complaints are indicated by a bitter, nauseous taste in the mouth, a foul tongue, and the appearance of the faeces. The best treatment for an ordinary attack of bile is, first, to act upon the bowels by some gentle mercurial purge, —a few grains of Calomel or blue pills, followed in four or five hours by a saline draught, so as to freely move the bowels. Tonics such as gentian should afterwards be resorted to till the digestive organs have recovered their tone. (See LIVER.)

BILIOUS FEVER. (See FEVER.)

BILIOUS TEMPERAMENT. (See TEMPERAMENT.)

Birthwort.

BILLS OF MORTALITY are accounts of the number of deaths that have taken place within a particular district in a specified time, classified according to their ages, the diseases of which they died, &c. They were first compiled in London during the great plague of 1593, and ten years afterwards they began to be returned weekly, and have been continued down to the present time. Tables of this description, when their accuracy can be depended upon, are of the utmost importance as showing the progress of a people in civilization and comfort, and serve as a basis for many important calculations. The Northampton and the Carlisle tables have long served as the chief basis on which annuities, life assurances, and other calculations relating to the duration of human life, have been founded. By 5 & 7 Will. IV. c. 86, provision was made for a complete system of registration of births, deaths, and marriages throughout England and Wales; and the same was extended to Scotland by 17 & 18 Vict. c. 80.

BINARY COMPOUND. (See CHEMICAL Nomenclature.)

BINARY THEORY. (See SALTY.)

BIRDWIFED. (See CONVOLVULUS.)

BIOLOGY, *bi-ôf'-o-je* [Gr. *bios*, life, and *logos*, a discourse], is the science of life. In its widest sense, it includes life in all its forms on earth, and thus comprehends within its sphere all living organized beings. In a more restricted sense, it regards man only, and in this view it may be said to correspond with Physiology. (See PHYSIOLOGIST.)

BIOTRANATUS, or **BIATHANATUS**, *bi-o-tha'-nüs* [Gr. *bios*, life, or *biu*, violence, and *thanatos*, death], in Med., denotes one who dies a violent death, or very suddenly, as if there were no space between health and death.

BIPED, *bî'-ped* [Lat. *bis*, twice, and *pēs*, a foot], an animal having two feet; as man, bird. (See BIPEDA.)

BROWNEST, EDIBLE, the nests of a small Indian swallow, which are considered a delicacy, and are frequently mixed among soups. On the seacoasts of China and in Java, at certain seasons of the year, vast numbers of these birds are seen. They construct their nests out of a substance which they find upon the shore. This gelatinous matter is supposed by Kempfer to be molusca or sea-worms; according to M. de Poivre it is fish-spawn; and according to Linnaeus a kind of medusa or jelly-fish, called by fishermen *Mabbera* or *jetter*. The nests are of a hemispherical shape, and about the size of a goose's egg; and in substance bear a strong resemblance to ichthyocolla or isinglass. They are gathered by the Chinese, and sent to all parts of the world, and are esteemed great luxury.

BIRTHWORT. (See ARISTOLOCHIACEAE.)

Biscuit.

Biscuit, *bis'-kit* [Fr., twice-baked], a kind of bread, usually made in the form of small flat cakes. Formerly biscuits were subjected to two bakings,—whence the name; but this is not found necessary at the present day. The most common sort is the ordinary sailors' biscuit. It is an article of very great importance on board ship, where, in long voyages, ordinary bread would become mouldy and unfit for food. Sailors' biscuits are made from a dough of coarse wheat, water, and common salt. After being well kneaded, the dough is rolled out into a sheet of the required thickness for the biscuit. Each biscuit is then cut out and placed in a hot oven for a quarter of an hour. Immediately after baking, biscuits are removed to heated rooms, where they remain for two or three days, in order that all the moisture may be thoroughly expelled from them. It is for the same reason that they are all formed in the shape of flat cakes. The dough of captains' biscuits is partially fermented before baking, and is made of finer flour. Water-biscuits are composed of flour and water, with an addition of butter, eggs, sugar, or spices. There are many other varieties of biscuits; and the name is applied to several kinds of sweet cakes, such as sponge-biscuit, &c. Several of the large manufactories make more than twenty tons of biscuits weekly.

Biscuits, MEAT, are made with a certain quantity of meat and flour, prepared and baked in the form of cakes. They are generally made by boiling slowly large pieces of raw meat in a small portion of water. After a time the fat is skimmed off, and the remaining soup boiled down still further, when flour is added. The mass is then rolled out to the required thickness, and then baked and dried like ordinary ship biscuits. Meat biscuits, when boiled with twenty times their own weight of water, and then properly seasoned, make excellent soup; and they can also be eaten like ordinary biscuits. They generally contain half a pound of flour and the soluble part of five pounds of meat. They have been the means of preserving a large quantity of fresh meat, which the inhabitants of Australia and the Argentine republic were in the habit of throwing away, as they had no market for it. Meat biscuits were first introduced into Britain in 1851, at the Great Exhibition, by Mr. Borden, an American.

BISK. (See Aconitum.)

BISWER, a beverage composed of hot or cold burgundy, claret, or other red wine, poured upon ripe bitter oranges, and then adding sugar and spices according to taste. It is drunk either hot or cold, and its quality depends entirely upon the excellence of the wine employed.

BISMUTH, *bis'-muth* [Ger. *bismut*], in Chem., symbol Bi; atomic weight 212; specific gravity 9.3; a metal of a greyish-white

Bismuth.

colour, with a strong characteristic tinge of red. It is hard, brittle, and but slightly malleable. It fuses at 307° , and is obtained in fine cubical crystals by slow cooling. The peculiar property it possesses of expanding as it cools, renders its alloys of great use to the type founder and die-sinker. It also increases the fusibility of other metals with which it is united. The remarkable alloy known as "fusible metal" contains one equivalent of bismuth, one of lead, and two of tin; it fuses below 105° , and, by a certain admixture of cadmium, can be melted at a still lower temperature. Bismuth is also occasionally used in cupellation, and some of its compounds are used as pigments, the hydrated oxychloride being used as a cosmetic under the name of *pearl-white*. Bismuth occurs in nature principally in the metallic form in the clay-slate and gneiss formations, its principal source being Schneiberg, in Saxony: it is also found in Cumberland and Cornwall. Bismuth is extracted from the ore by heating it in inclined cast-iron tubes with cups attached. The tubes are brought to a white heat, and the bismuth flows into the cup, which are at the lowest part of the incline. Bismuth forms two oxides,—the teroxide, Bi_2O_3 , and an acid oxide, BiO_2 , or bismuthic acid. Nitrate of bismuth is prepared by dissolving the metal in dilute nitric acid with the aid of heat, which gives two to four-sided prisms, which are decomposed by water into an acid nitrate, which remains in solution, and a basic nitrate, the *trisulfate of bismuth*, falls as a precipitate. This salt was formerly called *magnesia* of bismuth. Bismuth occurs in nature associated with cobalt, silver, tin, and arsenic; also as an oxide, in *bismuth ochre*; as a sulphide, in *bismuthine* or *bismuth glance*; as an arsenide, a carbonato, and a silicate, in *bismuth-blende*. It is employed medicinally as an anti-purpuric, sedative, and astringent in irritable conditions of the mucous membrane of the stomach, as in *gastrodynia*, chronic sickness and vomiting, diarrhoea, &c. It is also used externally as an ointment mildly stimulant in certain chronic diseases of the skin. Bismuth is purified by taking two ounces of the metal and one ounce of nitrate of potash in powder, and fusing them in a crucible, constantly stirring the mass for 15 minutes, or until the salt has solidified into a clay over the metal, then remove the salt, add another ounce of the nitrate of potash, and repeat the process; then pour the metal into a suitable mould, and allow it to cool. The pharmacopoeical preparations of Bismuth are—the *subnitrate*, composed of 2 ounces of purified bismuth, and 4 fluid ounces of nitric acid with a sufficient quantity of distilled water; dose from 5 to 20 grains; frothed or lozenges, each containing 2 grains; the carbonate, composed of 6 ounces of the subnitrate, and 6 ounces of

Bistort.

carbonate of ammonia—dose from 5 to 20 grains, and solution of citrate of bismuth and ammonia—dose from $\frac{1}{2}$ to 1 fluid drachm.—one drachm containing 3 grains of oxide of bismuth.

BISTORT (See POLYGONUM.)

BISTOURY, *bis' too re* [Fr. *bistourie*], in Surg., is any small knife used for opening abscesses, and other surgical purposes. It may be straight or curved convex or concave, sharp-pointed or probe pointed &c.

BITTERS, the mother liquor left after the extraction of salt from sea water by crystallization. It contains sulphate of magnesia, or Epsom salts in large quantities and is one of the principal sources of that salt.

BITTERS, *bit' ter*: [Ang. *Sav*] the common name for an infusion of bitter herbs, which is consumed in large quantities as a stomachic, generally mixed with ardent spirits. The plant usually selected for the preparation of bitters is the garden Angelica (see ARACHANGELICA), the roots and seeds being used. Chamomile flowers, coriander seeds, and other vegetative tonics and stimulants are occasionally employed.

BITTERWEED (See SOLANUM.)

BLACK ASH, impure soda, contaminated with sulphide of calcium, charcoal, and other impurities, formed in the manufacture of soda from sea salt. By leavening, filtration, and evaporation the ordinary soda of commerce is produced. (See Soda.)

BLACK DEATH is the name given to a most destructive pestilence which, towards the middle of the 14th century, extended itself over all parts of the known world. It took its name from the black spots which appeared on the skin. It was an intense form of the oriental plague, and like it, was characterized by bubos and carbuncles. It is said to have taken its rise in China, and to have thence travelled westward to Europe, where it made its appearance in 1348. Some accounts state that the impure air was actually visible as it approached with its burden of death. Historians of that time give a most horrible picture of the sufferings and deaths that were occasioned by it. In Europe alone, during the three years that it prevailed, it is said to have carried off 25,000,000 persons. London having lost over 100,000. It was looked upon as a judgment of Heaven and many thought to save themselves by giving their goods to the Church, or by personal chastisement. The Jews were also looked upon as the cause of it, and, in consequence, great numbers of them suffered death. In the city of Mayence alone 12,000 of them were cruelly murdered. The black death has several times made its appearance in Europe since that time, but never with the same virulence. Boccaccio, in the introduction to his "Decameron" has given a lively description of its physical and moral effects in Florence; and a full and interesting account

Bladder, Diseases of the.

of it is to be found in "Hecker's Epidemics of the Middle Ages."

BLACK DRAYER, *dray'*, is an active saline purgative frequently employed when a speedy evacuation of the bowels is desired. It is composed of an infusion of senna and Epsom salts, with ginger, or some other aromatic to counteract its grasping tendency (See Cassia.)

BLACK FLUX, *blak' flux*, a compound, containing carbonate of potash mixed with carbon, much used in the laboratory as a reducing or decolorizing agent. It is prepared by heating tirtarate of potash (crocus of tartar) in a covered vessel until a charred mass remains.

BLACK BERRY (See RUBUS.)

BLACK THORNY (See PRUNUS.)

BLADDER *blad' der* [Lax. *blader*, from *blao* to blow] *vesica urinaria* in Anat., is a thin membranous bag which serves as a receptacle for the urine secreted by the kidneys until it is voided through the urethra. It is situated in the pelvis and is kept in its place by ligaments, which are usually divided into true and false, the latter being formed of folds of the peritoneum. It is composed of three coats or membranes—the external or fibrous membrane, the middle or muscular membrane, and the internal or mucous membrane. The muscular membrane is composed of bands of muscular fibres running in different directions, and commonly distinguished into two layers—an external or longitudinal and an internal transverse or circular. Its figure is nearly that of a short oval. It is broader on the fore and back than in the lateral part, rounder above than below, when empty; and broader below than above, when full. It is divided by anatomists into the summit or superior fundus of the body, the base or inferior fundus and the neck—that portion which is constituted by a sphincter muscle, and communicates with the urethra. On each side rather below its middle, it receives the two ducts called ureters, which convey the urine from the kidneys into the bladder.

BLADDERS, DISEASES OF THE.—The bladder, like every other organ of the body, is liable to certain diseases, one of the most common of which is inflammation, or cystitis. It chiefly affects the mucous coat of the bladder, but all the other coats may be implicated, and it is either chronic or acute. The acute form is known by great pain in the region of the bladder, attended with fever and hard pulse, and a frequent and painful discharge of urine, or a retention. The disease runs its course with rapidity, and subsides or carries off the patient in a few days. The treatment to be adopted is that which is followed in inflammatory diseases generally. Hot fomentations, ointments, mild sperients (as castor oil), a light diet, and mucilaginous drinks, are the

Blancmange.

means to be employed. If there is retention of urine, a catheter should be frequently used, but not otherwise. The chronic form of this disease is not uncommon, and arises from various causes,—from an abnormal condition of the urine, from a diseased state of the bladder, or of some of the neighbouring parts, or from the presence of some foreign substance in the bladder, as calculus (See *Calculus*). In such cases it is of importance to ascertain the true cause. In general, the treatment is by opiates, and sedatives with nourishing diet and tonics. Infusion of Buchu or of Bearberry is also recommended, and sometimes a belladonna plaster to the part will be of service. Irritability may exist in the bladder, unaccompanied by inflammation, and may arise from over distension or from nervousness. It is to be treated by the administration of tonics, with the avoidance of all stimulating drinks. The bladder may be affected with paralysis, resulting either from accident, or from disease of the nervous centres, or from over distension. It gives rise also to incontinence of urine which, however, is to be distinguished from that which sometimes arises from irritability, inasmuch as in this case the bladder is full and has no power to evacuate, so that it must be drawn off by the catheter. Retention of urine may be caused by mechanical obstacles to its exit, by paralysis, or by a want of power over the muscles.

BLANCMANGE, or BLACMANGE, *blé mōng'* [Fr., white food], a preparation of milk, cream, sugar, and mangue which are boiled together. After being flavoured with lemon-peel, brandy, &c., the fluid is run into a mould and allowed to stiffen.

BLEEDING, or Blood letting, *bleed ing'* [Sax. *bledan*, to bleed] in Surg., is the removing of blood from the body, with a view to the prevention or cure of disease. It is divided into general and local, vene section and arteriotomy are instances of the former, siccotomy, cupping, and the application of leeches, of the latter. General bleeding is had recourse to when the object is to lessen the whole mass of the circulating fluid, local, when the object is to lessen the quantity in some particular part of the body. Venesection is the mode usually had recourse to in general bleeding, and the veins most commonly selected for the purpose are those at the bend of the elbow. In proceeding to open a vein, a bandage is first placed moderately tight round the arm, above the elbow, to obstruct the return of the venous blood, and when the veins begin to swell, the operator seizes one, and pressing the thumb of his left hand upon it at a short distance below the spot where the opening is to be made, presses the lancet into the vein, and gives a slight cut upwards in withdrawing it, so as to make the opening sufficiently large to allow the blood to flow

Blindness.

out in a thin stream. When a sufficient quantity of blood has been abstracted, the operator's thumb should be placed on the cut in the vein and the bandage removed, when a folded piece of lint, placed over the wound and secured by a figure of 8 bandage, will be sufficient to prevent the bleeding, and the wound will speedily heal. It should be borne in mind, however, that bleeding is always a dangerous operation, even apart from the evils that may be produced from the abstraction of too much blood, and should never be performed, except in very urgent cases, by any but a skilful surgeon. For local bleeding, leeches are always the safest and are most generally had recourse to. In dealing with leeches, it is well to remember that they are cold blooded animals, and that heat is highly injurious to them and units them for the performance of their office. Hence, when there is a difficulty in making them fly readily the part should be cooled with a cloth dipped in cold water or moistened with cream or milk, or a single drop of port wine, and the leeches confined in the proper situation under a small glass. In former times, bleeding was much more practised than it is at present. It was resorted to in almost every disease, particularly such as were inflammatory, or who thought to be so, and even where no disease existed, it was regarded as an excellent precautionary measure to have a vein opened once or twice a year. Some contend that this mode of proceeding was then necessary, and that since that time a great change has taken place in the physical constitution of the people. There may, perhaps, be something in this, but we cannot believe that the constitution of the people ever was such as to justify the wholesale bleeding that was at one time practised. For bleeding or a flow of blood from any of the organs, see *Hæmorrhage*.

BLIPNOBRACHIA, *blen nor r'd' a* [Gr. *blenna*, mucus *rhexē*, I flow] is a term used in medicine to denote an unusual discharge of mucus from any of the mucous membranes.

BLINDNESS, *blind ness*, is a more or less complete deprivation of vision, in consequence of a diseased state of the organs of sight. Some of the blind retain a slight perception of light, or are able to distinguish the general outlines of bodies or very bright colours, while others are entirely deprived of the faculty. Some are blind from birth, others become so in consequence of disease. In those that are born blind, the eyelids are sometimes united to each other, or to the eyeball itself, sometimes a membrane or film covers the eye, sometimes the pupil is closed, or adheres to the cornea, and sometimes the opening of the pupil is not in the right place, so that the rays of light do not fall in the middle of the eye. It may also arise from some defect of the optic nerve,

Blindness.

or of the brain in connection with it. Blindness may result from disease of the optic nerve, or of the brain; or from an abnormal condition of the humours or coats of the eye, intercepting the passage of the light to the optic nerve. Among the diseases of the brain that may produce blindness are hydrocephalus, inflammation, congestion, softening or wasting of that organ. The eye itself may be injured by inflammation, suppuration, or cancer; spots, films, or tumours may form on the cornea, and so destroy its transparency; the humours of the eye may become thick and turbid; or the opening of the pupil may be destroyed. Blindness often arises from debility of the optic nerve, occasioned frequently by long-continued overstraining of the sight. It is in this way that certain kinds of occupations are injurious to the sight, and often cause blindness. Hence it is, too, that in the northern regions where the country is long covered with snow, which reflects the sun's rays, and in the sandy deserts of Africa, blindness is common. In old age blindness is usually occasioned by a drying up of the humours of the eye, a thickening of the cornea or crystalline lens, or atrophy of the optic nerve. *Day blindness* is an inability to see during the day in a bright light. Those who have been long immersed in dark cells are often affected in this way. *Night blindness* is that state in which blindness comes on towards evening. This may continue for some time; but at length the eyes become weak during the day also, and it terminates in amblyopia. Proceeding, as blindness does, from such a variety of causes, it is impossible to say anything here regarding its treatment, which will be found noticed in other parts of the work. (*See Eye, Sight, AMAUROSIS, CATARACT, OPTIC-NERVOUS DISEASES.*) There is not one of the senses that affords such an endless variety of perceptions, such a fund of materials for the mind, the imagination, to work upon; as that of sight. When one considers the infinitely greater amount of information that is received by the eye than by the ear, he is naturally led to the conclusion that the mind must be in a much more helpless and pitiable condition than the deaf. In reality, however, this is found not to be the case, and various attempts have been made to account for it. The blind, as a class, are lively and cheerful; the deaf, shy and melancholy, often morose and suspicious. "Take," says Dr. Wilson, "a boy, it may be, of nine or ten years of age, who has never seen the light, and you will find him covetous, and ready to give long narratives of past occurrences, &c. Place by his side a boy of the same age who has had the misfortune to be born deaf, and observe the contrast! The latter is insensible to all you say; he smiles, perhaps, and his countenance is brightened by the beams of 'holy

Blister-Fly.

light,' he enjoys the face of nature, nay, reads with attention your features, and, by sympathy, reflects your smile or frown. But he remains mute; he gives no account of past experience or of future hope. You attempt to draw something of this sort from him; he tries to understand, and to make himself understood; but he cannot. He becomes embarrassed; you feel for him, and turn away from a scene too trying, under the impression that, of these two children of misfortune, the comparison is greatly in favour of the blind, who appears by his language to enter into all your feelings and conceptions, while the unfortunate deaf-mute can hardly be regarded as a rational being; yet he possesses all the advantages of visual information as direct sensation." The cause is not that the blind possess a greater, or anything like an equal stock of materials for mental operations, but that "they possess an invaluable engine for forwarding those operations, however scanty the materials to operate upon—artificial language," which is the medium of thinking; and "its value to a man is nearly equivalent to that of his reasoning faculties." The truth is, that the deaf are far more isolated all their lives from those that hear than the blind are from those that see. The blind are able to make up, in great measure, for their want of sight by the greater development of their other senses. By assiduous application and attention, the senses of touch and hearing become much more delicate and acute. It has even been said that some have been able to distinguish colours by means of touch; but this seems very doubtful. By accurately distinguishing the various kinds and modifications of sound, they are able to form correct ideas on many subjects. Much, too, depends upon the memory, which, from exercise, becomes much more retentive than in ordinary cases. It is estimated that there are no fewer than 3,000,000 of blind persons in the world at the present time. Of this vast number, 37,000 are in France, about 45,000 in Germany, upwards of 70,000 in Russia, about 3,000 in Holland, 5,700 in Sweden, upwards of 2,000 in Norway, and about 29,000 in the British Isles.

BLINDNESS, COLOUR. (*See Colour BLINDNESS*)

BLISTER, *Blister* [Ang.-Sax.], is a bladder or vesicle on the skin, caused by the accumulation of serous fluid under the cuticle, and may be occasioned by a burn, by hard friction, or by disease. There are certain substances also that possess the property of raising blisters. (*See Blisters.*) In puncturing a blister, in order to allow the serous fluid to escape, care should be taken not to raise or displace the epidermis, particularly if the skin be very tender underneath.

BLISTER-FLY, or CANTERBURY [*Ligia veris,*

Blisters.

(*tonia*), an insect common to the south of Europe. Its body is used for medicinal purposes, having the effect of raising a blister when applied to the skin. It has been observed that the efficacy of the insect increases according to the heat of the country inhabited by it.

Blisters, or Vesicants, are medical agents, which, when applied to the skin, irritate it, and cause a secretion of serous fluid, which collects under the cuticle, and forms a blister. Many medicinal agents possess this property, but that most commonly employed in this country is the Spanish, or blistering fly, or cantharis. It is usually employed in the form of a plaster, composed of one part of cantharides in powder to two parts of a mixture of yellow wax, suet, lard, and resin. Sometimes it is of advantage to employ it in a liquid form. The blistering liquid of the Pharmacopœia is composed of 8 ounces of cantharides, in powder, 4 fluid ounces of acetic acid, and a sufficient quantity of ether to form 20 fluid ounces. There is also a blistering paper, *charta epispastica*, sometimes used. Tincture of cantharides, croton oil, strong liquid ammonia, and mustard, are applications of the same kind, but milder in their operation. Boiling water is a speedy and powerful vesicant. Blisters are employed as counter-irritants, to draw away inflammatory action from a part to which direct remedies cannot be applied. They also stimulate the absorbents, and thus promote the removal of effused fluids. Blisters should never be employed at the beginning of an inflammation, nor during its acute stages, but only after it has subsided. They should not be kept on too long, but removed, and the part dressed with soft warm poultices. Usually from six to ten or twelve hours is the time allowed for a blister, but sometimes three or four hours may be quite sufficient. Sores which have taken an unhealthy action have often been produced by keeping blisters too long upon children. A piece of very thin paper, oiled, is often laid between the blister and the skin when it is applied to children or very thin-skinned people. Blisters of cantharides particularly, when kept on for too long a time, sometimes produce strangury and other distressing affections of the bladder.

Blood, *blud* [Sax. *blod*; Germ. *Blut*; Lat. *sanguis*], a red fluid circulating through the heart, arteries, and veins, of animal bodies, serving for the nourishment of all their parts, and the support of life. This nutritive fluid, called scientifically the *Liquor Sanguinis*, consists, firstly, of water, holding, in a dissolved condition, fibrine, albumen, potassium, and sodium, together with phosphoric acid and other substances, secondly, of corpuscles, or globules, which float in the *Liquor sanguinis*. When drawn from the

Blood.

body, the blood undergoes a remarkable change. By degrees it gelatinizes, and forms spontaneously coagulum and serum. Coagulum consists of the fibrine and the corpuscles; serum, of water, albumen, and the various saline matters. The corpuscles are of two kinds—red and white, the red being the more numerous. In man, a red corpuscle varies in size from $\frac{1}{10}$ to $\frac{1}{5}$ of an inch. The discovery of the globules of the blood is due to Louwenhoek and Malpighi, whose researches were made soon after the microscope was invented. Blood is termed arterial or venous, according to the vessel in which it circulates. Arterial blood is a florid red, with a stronger odour and less specific gravity than the venous fluid. Venous blood is of a dark purple. The scarlet, or arterial blood, which is one degree warmer than venous blood, owes its colour to its undergoing contact with atmospheric air in the lungs; it circulates in the pulmonary veins, the left cavities of the heart, and the arteries, by which it is distributed to the different organs throughout the body. The dark purple blood circulates in the veins, in the right cavities of the heart, the pulmonary artery, and the lungs. (*See Circulation of the Blood.*) There is, again, a difference between arterial and venous blood in respect to the gases which they contain, the first holds a supply of oxygen; the second is rendered impure by the carbonic acid with which it is loaded. Blood is the product of the elaboration of chyle, and acquires its nutritive and life-giving qualities in respiration. By means of the arterial vessels it penetrates to all the organs, distributing nutrition to every organic tissue. It is, moreover, the principal source of animal heat; from it, also, the secretive organs derive their various products, such as saliva, bilo, urine, &c. The average quantity of blood in an adult man has been calculated at 28 lb. or pints. It has been shown that the composition of the blood undergoes a change in various diseases; and, after repeated bleedings, the number of corpuscles becomes permanently diminished. The colour, as well as the composition of the blood, varies in different sections of the animal kingdom: red in the vertebrates and annelids, white and transparent as water in insects and crustaceans, bluish-white in molluscs, yellowish in holothurians and some other invertebrates. This difference in colour arises from the corpuscles, which are in some cases red, and in others white or straw-coloured, or bluish-white. The chemical constituents of blood, when in a healthy condition, are—albumen, fibrin, haematin or colouring matter, oleic, stearic, lactic, phosphoric, sulphuric, and hydrochloric acids, in combination with soda, potash, ammonia, lime, magnesia, and a small portion of phosphorized fat. The blood also contains oxygen, nitrogen, and

Blood Flower.

carbonic acid." In considering the chemical constitution of the blood, it may be regarded as consisting of two parts—the *Liquor sanguinis*, and the blood corpuscles floating therein. The *Liquor sanguinis* is composed of serum, holding a very small quantity of fibrin in solution. The following table of the composition of these two parts of the blood is based on the analysis of Schmidt and Lehmann, and is a modification of that quoted in Miller's "Elements of Chemistry":—

Specific gravity of blood corpuscles, 1.0855.

Composition of Blood Corpuscles.

Water	688
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Solid constituents:—

Hæmatin (with iron)	16.75
Globuline and cell membrane.....	282.22
Fat	2.31
Extractive matter	2.60
Chlorine	1.686
Sulphuric acid	0.060
Phosphoric acid	1.134
Potassium	3.328
Sodium	1.052
Oxygen	0.667
Phosphate of lime	0.714
Phosphate of magnesia	0.073

Specific gravity of liquor sanguinis, 1.028.

Composition of Liquor Sanguinis.

Water	902.90
Fibrin	4.05
Albumen	78.84
Fat	1.72
Extractive matters	3.94
Chlorine	3.644
Sulphuric acid	0.115
Phosphoric acid	0.191
Potassium	0.323
Sodium	3.341
Oxygen	0.403
Phosphate of lime	0.311
Phosphate of magnesia	0.222

Taking the blood as a whole, Liebig gives its component parts as follows:—

Water	80
Solid matter	30

The solid matter, on being incinerated, gives 1% to 1½ per cent. of salt, which consists of one-half sea-salt, one-tenth of peroxide of iron, and the rest of lime, magnesia, potash, soda, phosphoric acid, and carbonic acid.

Blood Flower. (See HEMANTHUS.)**Blood-Letting.** (See BLEEDING.)**Blood Root.** (See SANGUINARIA, and HEMOBRYON.)**Blood, Spitting or Vomiting of.** (See HEMOPTYSIS.)**Bronny Flux.** (See DYSENTERY.)

Born, Copper. A fine blue mineral, consisting of sulphide of copper. It is also known as indigo-copper.

Borne Copperas. sulphate of copper, so called to distinguish it from green copperas, which is sulphate of iron. (See COPPER, SUL-

Boil.

(See *Boil*.) It is also called blue vitriol and blue-stone.

Blue Pill, or Masticual Pill [Lat. *Pille Hydrocytri*], is formed by rubbing 9 ounces of mercury with 2 ounces of confection of roses until metallic globules are no longer visible, then adding 1 ounce of liquorice-root in fine powder, and mixing the whole well together. Dose from 3 to 8 grains,—3 grains of the pill containing 1 grain of mercury. This is one of the best forms of administering mercury internally. To induce salivation, 5 grains may be given night and morning, combined with a little opium, to prevent its passing off by the bowels. In larger doses it acts as a purgative. Blue pill is very serviceable in many forms of lullous derangement, but the frequent or indiscriminate use of this medicine is justly condemned as productive of many evils. (See MASTICUM.)

Blushing, blush-ing [Dan. *blæse*, to blase or glisten], is a sudden suffusing or reddening of the face, excited by a sense of shame, confusion, or surprise. It is produced by an increased flow of blood into the capillary vessels of the face and neck; and, besides reddening, it creates a sensation of heat in those parts. It is occasioned by the mental shock acting upon the brain, and withdrawing the nervous energy which ordinarily contracts the muscular coats of the blood vessels of these parts, whence the blood is permitted to flow with greater violence through the vessels. In order to cure the habit of blushing, which is often troublesome, persistent efforts should be made to maintain a calm and self-possessed frame of mind under exciting circumstances.

Bollehavia, bore-ha'-vi-a [so named after Boerhaave, the celebrated physician], in Bot., a gen. of plants belonging to the nat. ord. *Nyctaginaceae*. The species are employed medicinally, both in Peru and the East Indies, having emetic and purgative properties. *B. tuberosa*, a native of Peru, is employed as a culinary vegetable.

Boil, boil, called also *furniculus*, from the Latin *furo*, I rage, on account of the violent heat and inflammation attending it, is a hard painful tumour of the skin and the subjacent cellular tissue. It makes its appearance as a small hard inflamed spot on the skin, and gradually enlarges into a painful tumour, having a white conical centre, surrounded by a hard inflamed base, and varying in size from the bulk of a pea to that of a pigeon's egg. It proceeds to suppuration and discharges a few drops of purulent matter, commonly mixed with blood, and a central mass, called the core. This last often lies deep, and causes considerable pain before coming to a head; but, without its removal, the abscess will not heal. Boils, though generally very troublesome, are not attended with danger. They occur, mostly in young and vigorous persons; but they also occasionally break out

Bolus.

upon the weak and delicate. They sometimes follow each other in rapid succession, and are most common in the spring. *Treatment*.—They all take their rise in some disordered state of the digestive organs, and hence it is necessary that the bowels be at first freely opened, and then regulated by gentle, non-irritating laxatives. The diet should be plain and simple, and stimulants ought to be avoided. In delicate constitutions, a course of sarsaparilla will be found of great use; quinine is also recommended in some cases. In dealing with the boil itself suppuration is to be hastened and perfected by means of incised moist poultices, and as soon as the prominent part of the swelling becomes soft, a free opening should be made into it with a lancet, and as much matter as can be pressed out of it by tolerably firm pressure should be removed, together with the core or the poultice should be continued until the core is drawn out, when the wound will speedily heal.

Bolus de lait [Gr. *bolos*, a mass], a large soft kind of pill larger than a common pill but yet not too large to be swallowed at once. It might be composed of any of the ingredients used for pills, but it was an inconvenient form, and is now generally discarded.

Bone, *bony*, in Anst., is a hard compact structure, forming the framework or skeleton of the body in man and the higher animals. It is confined to vertebrate animals, and even in the lowest order of this class, the cartilaginous fishes, it is entirely wanting. The bones form a framework for the moulding and adequate support of the soft parts of the body, cavities for the lodgment and protection of delicate organs, joints for locomotion and levers for the action of the muscles. They are always in the interior of the body, and even when they approach the surface are covered by some soft membrane, muscle, skin, &c. The first development of bone is commonly—though not always, as in the bones of the head—preceded by the formation of a cartilaginous structure occupying the place which the bone is afterwards to take. It has commonly been said that the bone is formed by the ossification of the cartilage, but this, for various reasons, is thought not to be the case. The process of bone formation always commences in the immediate neighbourhood of blood vessels, which pass down into canals excavated in the substance of the cartilage, and lined by a continuation of its investing membrane. Hence the spots where these vascular canals are especially developed, are termed centres of ossification. One of these is usually found in the centre of the shaft of a bone, and one at each end, with an additional one for any considerable projection or process. In the flat bones there is generally one in the middle of the surface, and one in each of the principal

Bone.

processes. Until the bone attains its full dimensions, the parts which contain distinct centres are not connected by osseous union, but only by cartilage, so as to allow an increase in the size of the bone by the growth of cartilage between its detached portions, which gives place to bony structure when there is no further need of increase. There exists a close correspondence as to the number of ossific centres in the early condition of the skeleton of all vertebrate animals. Bones are so constituted that a constant process of deposition and absorption is carried on in them as in the softer tissues, modelling the shaft into its requisite proportions during the successive stages of growth. It is much more actively carried on in youth than in middle life, and is greater in the vigour of manhood than in old age. Bones increase in length not so much by interstitial deposit, as by addition to their ends that is, by progressive ossification of the layers of cartilage which intervene between the ends of the shaft and the epiphyses. Bones are largely supplied with blood vessels. The solid osseous texture which forms the cylindrical shafts of the long bones, and the thick external plates of the denser flat bones, are penetrated by a series of large canals, termed Haversian (after their discoverer), which form a network in its interior, and serve for the transmission of blood vessels into the interior. These canals, in the long bones run for the most part in a direction parallel to the central cavity, and communicate with this, with the external surface, and with each other, by frequent transverse branches. They vary in diameter from $\frac{1}{16}$ to $\frac{1}{12}$ of an inch, averaging about $\frac{1}{16}$, and are smallest near the outer surface, where the bone is most compact, but becomes gradually larger towards the interior. In the long bones of man, and of most mammals, there is a central cavity which is filled with the fatty substance known as marrow, and the space in which the marrow lies is called the medullary canal. This cavity does not exist in the bone in its early state but is formed by the removal of the cancellated osseous tissue first developed in its interior. Among birds, however, the central cavity, instead of being occupied by marrow, is filled with air, and communicates with the lungs, so that the membrane lining it becomes an auxiliary organ of respiration, while the lightening of the bone thus produced diminishes their specific gravity. Bones are covered externally by a strong fibrous membrane, termed the periosteum, which serves to protect the blood-vessels entering them. The medullary canal is also lined by an extremely delicate membrane, termed the medullary membrane, which supports the marrow, and provides a stratum for the subdivisions of the medullary artery before they penetrate the contiguous

Boracic Acid.

osseous substance. The Haversian canals are also lined by a similar membrane. Though bones possess little sensibility in health, yet, when diseased, they become highly sensitive, a manifest indication that they are supplied with nerves. These may, indeed, be traced into some of the minute foramina on the shaft of a long bone, but more easily in the articular ends. A nerve also enters the medullary canal with the nutrient artery of the medulla and divides, like the artery, into an ascending and a descending branch. Bone is composed of a basis of animal matter impregnated with "bone earth," or phosphate of lime. The first ingredient makes it tenacious and elastic, the second gives it the requisite hardness. These may be separated from each other: the latter may be entirely dissolved away, by soaking the bone in dilute muriatic or nitric acid when a substance of a certain granular appearance, i.e. salt, the former, by subjecting the bone to a heat sufficient to decompose the animal matter, when we obtain the whole calcareous substance *in situ*. The animal portion of a bone forms about one third of the shaft about two thirds, and the relative proportion of the two elements is said to differ little in different classes of animals. The following are the analyses of os femur and the human fore arm by Heintz —

	Ossium	Hum.
Animal matter	30 58	32 12
Phosphate of lime	57 67	52 14
Carbonate of lime	6 93	6 32
Phosphate of magnesia	2 07	2 0
Fluoride of calcium	4 69	2 3
	100 00	100 00

Bones are liable to various kinds of disease, like other parts of the system. Inflammation may attack them, and produce the same changes that it does in the soft parts, suppuration, softening, ulceration and mortification. In slighter cases it may cause softening and swelling. Apricot and cooling incisions, with leeches and fomentations should be employed at first, and as soon as pus appears to be formed a free opening should be made. (See CARIES, NACROMA, EXOSTOSIS, RICKETS.) Sometimes atrophy, or wasting of the substance of the bone, takes place in consequence of disease, or the supply of arterial blood being interrupted, or simply from disease. Again, bones sometimes lose their earthly constituents and become soft and brittle breaking often from the slightest cause. It is most frequently met with in elderly females. The cause of this disease is unknown, and little is known of its treatment, beyond endeavouring to strengthen the system. For broken bones, see FRACTURES.

BORACIC ACID., *bo rä'ik* [from Arab *bawwā*, a species of nitrile, (BO_3)]. —This acid, which may be regarded as a tetroxide of boron,

Borax.

(see *BORON*), is the only known compound of oxygen and boron. It occurs in nature in certain volcanic districts, where it issues from the earth in jets mixed with steam. In Tuscany, these jets, or *fumaroles* as they are called, are conducted into artificial basins or small ponds. The boracic acid remains dissolved in the water, which is periodically removed, and evaporated in shallow leaden pans, which are heated by other *fumaroles* in the neighbourhood. During the evaporation, great quantities of sulphate of lime are deposited, which require removal from time to time. About 750 tons of crude boracic acid are annually exported from Tuscany. The crude acid is contaminated with 25 per cent of sulphate of ammonia and alumina, and other saline impurities. Boracic acid is used principally for making borax or borate of soda. (See *BORAX*) Boracic acid, on being strongly heated, becomes anhydrous and at a red heat it fuses into a transparent glass, which remains clear as it cools, but it soon crumbles to pieces by absorbing water from the air. Boracic acid communicates to its compound the property of fusibility hence the use of many borates, more especially the borate of soda as fluxes. It dissolves in three times its weight of boiling water, but is very insoluble in cold. The solution is remarkable for possessing the properties of alkali when tested with turmeric-paper; which it changes to a dark brown. Boracic acid dissolves in alcohol and burns with a characteristic green flame, with the exception of borate of soda.

BORACIE (See *BORACIO*)

BORACIO, *bo rá'go* [Lat. *apo* the heart *ago*, I cheeze because it was believed to calmate the heart], in Bot., a genus of plants forming the type of the nat. ord. *Boraginaceæ*. The *young* *L. officinalis*, commonly known as *Borage* is now a naturalized plant in England and most of the countries in Europe, but was at a remote period confined to Asia Minor. It is characterized by a wheel-shaped corolla with a very short tube, the mouth of which is closed by scales, by five stamens with forked filaments, the inner arms of which support the anthers, and by these anthers being convenient around the style, in the form of a cone. The entire plant is rough with hairs, and has rather a coarse appearance but its flowers are very beautiful, being of a fine blue colour. The young leaves were formerly always added to a cool tankard, or draught made of wine or cider, with water, lemon, and sugar. The flowers are used on the continent to ornament salads, and the tender tops are sometimes boiled in soups.

BORAX, *bor-äks* [Arab *bawwā*, a species of nitrile], a compound containing boracic acid (which see) and soda. It was formerly imported from the East in the crude state, under the name of *savai*, which contained

Boron.

borax in combination with various substances of a saponaceous nature. It was purified by being heated with lime or soda until the whole of the soapy matter and other impurities were separated. Borax is now mostly prepared by fusing two parts of boracic acid with one part of soda ash. It crystallizes in rectangular hexagonal prisms, containing 10 equivalents of water. Great pains are taken to crystallize the solution in regular crystals of a large size, as such only are marketable. Borax has a feebly alkaline taste and reaction; and in medicine is sub-astringent, detergent, diuretic, and emmenagogue. It is recommended in certain uterine affections, and as a solvent for uric or lithic calculi. Dose, 5 to 40 grains. The glycerine of borax, composed of 1 ounce of the latter and 4 fluid ounces of the former, is an excellent application to aphthae and ulcers of the inside of the mouth, sore nipples, eruptions, &c. Of similar use is the honey of borax, composed of 64 grains of borax to 1 ounce of clarified honey.

Boron., bor'-on, in Chem. (symbol B, equivalent 10), a combustible element, closely allied in its properties to carbon and silicon (both of which see). In nature it occurs in combination with oxygen, in the form of boracic acid, in a few localities. It was first obtained by Davy in 1808, by submitting moistened boracic acid, inclosed between platinum plates, to the action of the voltaic current. It was, however, but imperfectly known until Thenard and Gay-Lussac obtained it more readily by heating boracic acid with potassium. The metal combined with the oxygen of the acid to form potash, which was washed away with water, leaving the boron behind. Boron thus prepared is a brownish-green powder, dissolving slightly in water, forming a yellowish-green solution. It is rendered insoluble by being heated in close vessels; its specific gravity being at the same time changed from 1.183 to 1.844. It suffers no change, being neither volatilized nor fused. It may, however, be incited by the heat generated by a powerful galvanic battery. Like silicon, it is a non-conductor of electricity. Alkalies and acids (except nitric acid) produce no effect on it. Nitric acid converts it into boracic acid. Prepared in the above way, boron is anhydrous; but MM. Deville and Wöhler have obtained it in garnet-red transparent crystals, by fusing boracic acid with 80 per cent. of metallic aluminium in a powerful furnace. The crystals are extremely hard, scratching sapphire and corundum, and yielding only to the diamond, which is generally injured by the operation. Crystal-lined boron has never been fused, and resists the action of oxygen at very high temperatures.

Boswellia., bos-wel'-i-a, in Bot., a gen. of plants belonging to the nat. ord. *Amygdalaceæ*.

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The most important species is *B. thurifera*, a tree which grows to a large size, in many situations, from the Coromandel coast to the central parts of India. This plant is the source of the valuable gum-resin known as Indian olibanum. (See *Olibanum*.)

Botany., bot'-a-ni [Gr. *botan*, an herb], that part of natural history which relates to the vegetable kingdom. In its widest sense, botany comprehends all that is known of plants, and, therefore, forms a boundless field of inquiry. The student has to consider the external configuration of plants,—their structure, the functions which they perform, the relations which they bear to each other, and the uses to which they are subservient. Many are deterred from studying botany by a misconception of its nature and scope. Imagining that its sole object is to name and classify the various vegetable productions of the globe, they conclude that the study is confined to the acquisition of certain dry details and a vocabulary of hard words. "The standing objection to botany," writes Gilbert White of Selborne, "has always been, that it is a pursuit that unites the fancy and exercises the memory, without improving the mind or advancing any real knowledge But the botanist should be by no means content with a list of names; he should study plants philosophically, should investigate the laws of vegetation, should examine the powers and virtues of efficacious herbs, should promote their cultivation, and graft the gardener, the planter, and the husbandman on the physiologist. Not that system is by any means to be thrown aside,—without system, the field of Nature would be a pathless wilderness,—but system should be subservient to, not the main object of, pursuit." To facilitate investigation, Botany has been divided into several departments, which may be regarded as separate sciences. The objects and scope of each of these sub-sciences will now be explained.

1. *Structural Botany*, or *Organography*, includes everything relating to the organization of plants. It describes the different kinds of tissue which enter into the composition of plants, it explains the structure of every organ; and it also teaches the relation that one organ bears to another. That branch of structural botany which has reference to the elementary tissues is sometimes distinguished as *Vegetable Histology*. The microscope has shown that the various tissues of plants are composed of little membranous sacs or vesicles, varying in form and size, and united in different ways. (See *Cxxv.*) The study of these elementary organs cannot be prosecuted without the aid of costly instruments, but much may be learned from the clear descriptions and excellent illustrations given in modern botanical works, particularly those of Lindley, Balfour, and Bentley. Some plants consist

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of simple cells only, which continue throughout life to produce new cells, and to perform all the vital functions. A flowering plant, however, although originally cellular, produces organs composed of cells and vessels, variously modified and arranged, and covered by an epidermis (which see). These compound organs may be divided into *nutritive*, or those concerned in the nourishment of the plant, and *reproductive*, or those which are employed in the production of new individuals. The former are the *stem*, *root*, and *leaf*, the latter, the *flowers* and *fruits*. Leaves occupy various positions on the stem and branches and their arrangement forms a subject for special study. The arrangement of flowers on the floral axis and its ramifications has also to be considered. The term *Morphology* has been applied so that portion of Organography which treats of the abnormal modifications of the different organs. The researches which have been made in this department during the last forty years, have confirmed the doctrine advanced by the German poet Goethe, namely, that all those parts familiarly known as leaves, flowers, and fruit are constructed on a simple uniform plan, out of one kind of organ in different states of modification and combination, and that there is no other difference between the flower of a rose and that of a nettle than what arises from modifications and combinations of this typical organ, which is the leaf. Morphology is a most attractive subject for study but less important in a practical point of view than that part of Organography which has reference to the ordinary forms of organs, and the manner in which they are arranged. No systematic arrangement can be understood without a knowledge of the laws upon which the symmetry of plants depends, and a practical acquaintance with the structure of every kind of organ.

2. Physiolog. of Botany treats of plants in a living or active state, and of the manner in which their functions are performed, it explains how they are influenced by the several agents of light, heat, air, and moisture, and it describes their various secretions and the nutriment afforded by the soil. Plants, not being endowed with voluntary motion, derive their food either from the soil in which they are fixed, or from the atmosphere by which they are surrounded. The nutriment, consisting of water, generally holding salts in solution, is absorbed by the aid of endosmose, by the extremities of the root. It then passes from cell to cell and ascends the stem, dissolving, in its course, some of the organic matter stored up in the vegetable tissues. Arrived at the greater veins and surfaces of the leaves, which are covered with minute openings, or *stomata*, the sap is exposed to the influence of light, heat, and air. About two thirds of the moisture taken up is now evaporated and

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exhaled, the remainder, which, of course becomes thickened, undergoes certain chemical changes, and then begins to descend by the under surface of the leaf, and along the bark. It takes either a direct or a circumlocutory course downwards, communicating with the centre of the stem by the medullary rays, depositing various secretions, more especially in the bark, and giving origin to substances which are destined to nourish and form new tissues. Finally it reaches the extremity of the root, where absorption had commenced. A small portion is there excreted, while the remainder mixes with the newly absorbed fluids, and again circulates in the sap. The circulation of the sap has been adduced as an example of the vital processes elucidated by physiology, because it is due to the combined action of all the organs of nutrition, and may therefore serve instead of several illustrations. The study of the special functions of the various organs necessarily precedes that of the general physiological phenomena, such as circulation, assimilation, respiration, fertilization, and germination. Under the names of the different organs of nutrition and reproduction, the reader will find particulars respecting their functions.

3. Systematic Botany, or Taxonomy—This department includes the principles of classification, which are based on observations which have been made on the structure and physiology of plants. It cannot therefore be prosecuted successfully until the student has acquired a complete knowledge of Organography. The object of systematic botany is to name, describe, and arrange plants in such a manner that the botanist may readily ascertain the name of any specimen and, at the same time, get an insight into its true nature and general properties. When it is considered that there are some 20,000 known species of plants, it is obvious that there must be a distinct nomenclature and classification, were it only to facilitate reference and communication. Before plants can be classified, their peculiarities of structure must be clearly defined, hence the necessity of the technical language which is employed in descriptive botany. This language ought not to deter the lover of nature from studying the principles of classification, for, in acquiring a knowledge of the numerous technical terms, he will, at the same time, fix in his mind the ideas which they represent, and thus, in reality, become acquainted with important elementary facts. "The technicalities of science," says Mr Page, "which are so ignorantly inveighed against, are, in fact, the instruments by which it effects its progress. New objects require new names, and new facts new phrases to express their relations, and the sooner the student can make himself familiar with those terms and their applications, the

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more rapid and pleasant will be his onward progress." The principles of classification constitute what is properly called *Taxonomy*, though this term is often applied to the whole department. There have been two great plans proposed for the classification of plants, one denominated *artificial*, and the other *natural*. The first is founded on characters taken from certain parts of plants only, without reference to others; while the second takes into account all the parts of plants, and involves the idea of *affinity* in essential organs. In both artificial and natural systems, the lower divisions—namely, the genera and species—are the same, the greatest difference between them consisting in the manner in which the genera are grouped into orders, and the orders into classes. The plants in one of the higher divisions of an artificial system, such as that of Linnaeus, have no necessary affinity, and are connected only by certain characters, more or less superficial, which have been selected as the signs of that division. In a natural order, on the contrary, all the genera will be found to have a true family likeness; for their association is the result of a careful consideration of the structure of every organ. The classes in the natural system have been formed upon the same principle, by uniting orders which possess many important characters in common. The Linnean system leads to little more than a knowledge of names, and can only be looked upon as an index to the genera. Though superior to every artificial scheme previously promulgated, its day has gone by, and the more philosophical system has taken its place. Linnaeus himself never intended it to be anything more than a provisional arrangement, and distinctly stated that a natural method was the great object of scientific inquiry. The general principles of the Linnean, or Sexual system, may be explained in a few words. Twenty-four classes are founded on the number, position, relative lengths, and connection of the stamens; while the orders in these classes depend on the number of styles, the nature of the fruit, the number of the stamens in the classes where this character is not used for distinguishing them, and the perfection of the flowers. The twenty-four class includes plants having inconspicuous flowers, and in it the orders are formed according to natural affinities. Under these classes and orders, all the known genera and species are arranged. Even as an artificial method for discovering the names of plants, the Linnean system has many imperfections. Being based upon the more obvious characters of the reproductive organs, it cannot be of the least use when the plants are not in full flower, with all the stamens and styles perfect. The different flowers on the same plant often vary as regards the number of the stamens. Again, if the

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classification were carried out rigidly, it would separate, in many instances, the species of the same genus; but so sensible was Linnaeus of the importance of maintaining the natural character of his genera, that he sacrificed the symmetry of his scheme for the sake of keeping all the species together.

The natural system of classification is based upon the real characters and affinities of plants, and necessarily takes into account all the organs. Though not perfect, it has already reached a very high point of development; and a great number of the orders which have been determined are quite as natural as the orders in the animal kingdom. In this way a knowledge of one species is to a great extent the knowledge of many; for an individual, if well selected, will exhibit the most important characters of all the other plants in the same natural group. Thus, by studying the common radish or mustard the botanist may obtain a general knowledge of about 1,600 species which constitute the order *Cucurbitaceae*, and which are all formed, as it were, on the same type. The properties of plants accord in a very remarkable manner with their structure; and, as a general rule, the position of a plant in the natural arrangement indicates its properties. For example, if a botanist, on examining a plant, finds all the structural peculiarities of the order just mentioned, he may feel confident that it is not poisonous, but most likely antiscorbutic or pungent. If, however, he should meet with one of the *Aitroposae*, he might safely set it down as a plant possessing poisonous narcotic properties. It will thus be seen that the natural system is much more than a mere index to the names of plants. It reveals to a certain extent the plan of creation, and is at once an aid to research and a record of discovery. Several schemes based upon the natural affinities of plants have been devised, but they agree in nearly all their grand divisions. The characters by which the primary groups have been determined are furnished by the elementary tissues, and the most important organs of vegetation and reproduction. Regarding only the elementary structure, plants may be arranged under the heads of *Cellular* and *Vascular*, according to the absence or presence of regular vessels. A more satisfactory arrangement results from a consideration of the different modes by which plants are propagated. Some spring from true seeds, containing the rudimentary organs called cotyledons; while others are developed from spores, in which no distinct organs can be traced. The former are said to be *cotyledonous*, and the latter *acotyledonous* (i.e. without cotyledons). As the number of cotyledons forms a natural distinctive character, the first group of plants is subdivided into *monocotyledonous*, having one cotyledon,

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and *dicotyledonous*, having two cotyledons. The seeds in which the root is produced affords characters which confirm this arrangement. The young root of an *acotyledon* is *exorthical*, that of a *monocotyledon* is *endorthical*, and that of a *dicotyledon* is *exorthical* (See EMBRIO). The three groups are further characterized by the stems, those of the first being *acrogenous*, those of the second *endogenous* and those of the third *exogenous* (See STEM). Stemless plants are said to be *thalloidal*, and form a distinct section of the *acotyledonous* group. The venation of the leaves exhibits the same great natural divisions, and similar results are obtained from a consideration of the flowers, monocotyledons and *dicotyledons* being *phanaeogamous*, or flowering, and *cotyledonous* *cryptogamous* or flowerless. The following table exhibits the relation of the different characters —

Embryo	Radicle	Stem	Flower
Acotyledo	Heterothal	Endogenous	Cryptogamous
Monocoty	Heterothal	Endogenous	Phaneroga
Dicoty	Exorthal	Exogenous	mous
lodenous			

The following arrangement is adopted by Professor Bentley in his "Manual of Botany." It is founded upon the schemes of Jussieu, De Candolle and Lindley. The vegetable kingdom is divided into two sub-kingdoms, — *Phanerogams*, flowering or *cotyledonous* plants, and *Cryptogams*, flowerless or *acotyledonous* plants.

Sub-Kingdom PHANEROGAMIA.

Plants which have evident flowers and which are propagated by seeds containing *cotyledons*.

Class I.—DICOTYLEDONES.

Embryo *dicotyledonous*, germination ex-
orthical, the stem *exogenous*, leaves with
reticulated venation, flowers *wholly* quin-
tar or quaternary arrangement. In this class
there are two great divisions —

Division 1. *Anemopera*.—Ovules enclosed in an ovary, and fertilized directly by the action of the pollen on the stigma. In this division there are four sub-classes —

Sub-Class 1. — *Thalameia* (1) plants with flowers usually furnished with both calyx and corolla, the latter composed of distinct petals inserted on the thalamus; stamens hypogynous, or adherent to the sides of the ovary.

Sub-Class 2. — *Calyxiflora*, with flowers having usually calyx and corolla the latter mostly with distinct petals and inserted on the calyx, stamens either perigynous or epigynous. This sub-class is divided into — 1. *Epigyne*, in which the calyx is free, or nearly so, the stamens usually perianthed, and the ovary superior. 2. *Epigyne*, in which the calyx is more or less adherent, and the ovary inferior.

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Sub Class 3. — *Corolla*, flowers having both calyx and corolla, the latter with united petals; stamens inserted on the corolla or ovary, or free and arising from the thalamus. Subdivisions — 1. *Epigyne* in which the calyx is adherent, and the ovary consequently inferior. 2. *Hypogyna*, in which the stamens are inserted into the thalamus, and do not adhere to the corolla, ovary superior. 3. *Lipostele* or *Ipomoea*, in which the corolla arises from the thalamus and has the stamens attached to it, ovary superior.

Sub Class 4. — *Machilomydea*, or *Apetala*, flowers having either a calyx only, or without both calyx and coroll.

Division 2. *Gymnosperma*.—Ovules naked or not enclosed in an ovary, being fertilized directly by the action of the pollen.

Class II.—MONOCOTYLEDONES.

Embryo *monocotyledonous*, germination endo-
thelial, stem *endogenous*, leaves
usually with parallel venation, flowers
with a ternary arrangement. In this class
there are three sub-classes: —

Sub Class 1. — *Dicot*, (1) leaves with a
rotundated venation, dicotyledons rhizome
all root with the wood arranged in a con-
centric manner, floral envelopes verticillate

(1) (2) *P tulosa* or *I florula* — Leaves with a pinnatifid venation permanent, floral envelopes (pinnatifid) verticillate and usually coloured, rarely scaly sometimes absent. Subdivisions — 1. *Lipogyna* in which the flowers are usually hermaphroditic, perianth adherent, ovary inferior.

2. *Ipogyna* with flowers usually herma-

phrodite, (1) with free ovary superior.
3. *Dulines*, in which the flowers are usually
unisexual perianth either absent or consisting
of a few scales.

Sub Class 2. *Gimaces*.—Leaves parallel,
permanent flowers glumaceous, but
that is, having no proper perianth, but
consisting of imbricated bracts.

Sub Kingdom CRYPTOGAMIA.

Plants which have no flowers, or which are propagated by spores. This sub-kingdom constitutes a class by itself, viz —

Class III.—ACOTYLEDONIA.

Other characters besides those which define the sub-kingdom may be enumerated. The germination is indefinite or obscure, the stem is sometimes present, and sometimes absent — in the former case, when wood, it is acrogenous, the leaves when they exist, have torqued veins; no true flowers are produced. There are two sub-classes —

Sub Class 1. *Acetosae*.—Plants with stem and leaves distinguishable, and possessing stomach.

Sub Class 2. *Thallogea*.—Plants with no distinct stems or leaves, stomach absent.

4. *Geographical Botany* treats of the man-

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ner in which plants are affected by climate and station, and endeavours to determine the conditions under which particular families or species of plants are confined to certain zones of latitude and altitude. It is a study of great interest, and one which cannot be successfully prosecuted without an intimate acquaintance with physical geography.

5. Fossil Botany investigates the nature of the plants found in a fossil state in the various geological formations. It is therefore at once a branch of botany and of geology.

The practical bearings of botany are most important, and are sometimes treated separately in manuals of the science, under the head of *Economic Botany*. For further information on this subject, see Lindley's "Vegetable Kingdom" and "School Botany;" Balfour's "Manual of Botany;" "Class-book of Botany," and "Botanist's Companion;" Bentley's "Manual of Botany;" Bahington's "Manual of British Botany;" Catlow's "Popular Field Botany."

BOUGIE, *boo'-she* [Fr.], a surgical instrument, used for overcoming stricture or other obstruction in any of the passages of the body; as the urethra, rectum, oesophagus, &c. It is long and slender in form, solid or hollow, stiff or flexible, according to its particular use, usually varying from $\frac{1}{4}$ th to $\frac{1}{4}$ th of an inch in diameter. It is made of various substances, as silver, or steel plated, enameled, gutta-percha, &c. One kind is also made by dipping a fine cord or thread of flax or silk in melted wax until it has acquired a sufficient thickness, when it is rolled smooth and firm on a marble slab. Bougies require to be employed with skill and caution, as there is always a considerable degree of danger attending their use. If used at all by inexperienced hands, the utmost caution should be observed, as much injury may arise from any hasty or violent efforts to remove the resistance that may present itself; it is rather to be overcome gradually, and by repeated attempts, so as not to excite much pain or irritation. The bougie should be allowed to remain for a few minutes in the passage, and the operation be repeated after an interval of three or more days, gradually increasing the size of the instrument till the canal is restored to its natural calibre.

Bovine, *bov'-i-nus* [Gr. *bov-*, great, and *mo-*, hunger], is a word used in Medicine to denote a canine or voracious appetite. The terms *cavia* or *bovine famæ* (Lat. *cavia*, a dog, or *bov-*, an ox, and *famæ*, hunger), are sometimes used in the same sense.

Bouquet or Wine, *boo'-kay* [Fr.], the odorous principle or perfume in all wines, partly derived from the grape, and partly from fermentation. It has some of the characters of an essential oil, and in some wines is present in small quantities, and is

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very evanescent; while in others it is abundant and persistent. According to Pélouze and Listig, the bouquet of wines, which they consider to be a substance formed during fermentation, is a true ether—namely, a combination of oxide of ethyle with oxalic acid.

BOWELS. (See INTESTINES.)

BOWELS, CONSTIPATION OF THE. (See CONSTIPATION.)

BOWELS, INFLAMMATION OF THE. (See ENTERITIS.)

BOX. (See BUXUS.)

BOYLE'S FUMING LIQUOR, *Boil's*, so called from having been invented by Robert Boyle, one of the fathers of chemistry in England. It is obtained by distilling one part of sulphur, two parts of chloride of ammonium, and two parts of lime. It is a mixture of several sulphides of ammonium and water. It is a yellowish oily liquid, with an intensely foetid odour. It is very rarely used in Medicine, under the name of *Liquor fumans Boylei*.

BRACHIUM, *bra'-ki-um* [Gr. *brachion*, the arm], in Anat., is the name given to the arm, or that part of the upper extremity which extends from the shoulder to the wrist. The term *brachial* hence forms part of the name of certain portions of the arm, as the brachial muscle, the brachial artery. The *brachial muscle*, or *brachialis intermus.*, is situated on the fore part of the os humerii. It rises fleshy from the middle of the os humerii at each side of the insertion of the deltoid muscle, covering the inferior and fore part of this bone, and is inserted by a strong short tendon into the coronoid process of the ulna. Its use is to bend the forearm. The *brachial artery* is a continuation of the axillary artery, which takes this name as it passes behind the tendon of the pectoralis major. It runs down the inner side of the arm, along the inner edge of the biceps muscle, behind the vena basilica, giving off several small branches in its course. Below the bend of the arm it divides into two branches,—the cubitalis and radialis.

BRAIN, *brai-*, is the name given to a soft pulpy substance, which in man and the higher orders of animals constitutes one of the great central masses of the nervous system (which see). As was to be expected, it is found most perfectly developed in man, in whom, with its membranes, vessels, and nerves, it constitutes the whole of the matter enclosed within the bones of the skull, and is hence termed the *encephalon*. In males, the average weight of the full-grown human brain is about 49 or 50 oz.; in females, 44. It varies, however, considerably in different individuals, from about 65 to 34 oz. in the male, to 56 to 31 in the female. The brain of the naturalist Cuvier is said to have weighed upwards of $\frac{1}{4}$ oz., and of that of the late Dr. Abercrombie, 63 oz. avoirdupois. Anatomists differ in opinion as to the

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size or weight of the brain at different periods of life. Some believe that it attains its full size as early as the third year, others about the seventh or eighth, while not a few are of opinion that it continues to grow until the fortieth year. From a series of observations, however, "it appears that in general the weight of the brain increases rapidly up to the seventh year, then more slowly to between sixteen and twenty and then more slowly to between thirty-one and forty, at which time it reaches its maximum point. Beyond that period there appears a slow but progressive diminution in weight of about 1 oz during each subsequent decennial period"—(Quain's "Anatomy")

The brain is divided by anatomists into the cerebrum, or brain proper, the cerebellum or little brain, the pons Varoli, and medulla oblongata. The *cerebrum* occupies the whole of the superior portion of the cavity of the cranium, or skull, and is by much the largest portion of the brain, averaging, in the male, nearly 44, and in the female, about 38 $\frac{1}{2}$ oz. The *cerebellum* occupies the lower and back part of the cranium, and is next in size to the cerebrum, weighing, in the male about 5 $\frac{1}{2}$, and in the female, 4 $\frac{1}{2}$ oz. The *pons Varoli* and *medulla oblongata* occupy the base of the brain and together average about 1 oz in weight, being rather larger in the female than in the male. The former occupies a central position on the under surface of the brain, and is connected with the cerebrum by two cords or peduncles, termed *cervello-cerebri*, with the cerebellum with two similar cords termed *cervella cerebelli*, and is also in contact with the medulla oblongata. The last is that portion of the encopment which connects it with the spinal cord. It is of a pyramidal form, having its broad extremity turned upwards, and connected with the pons Varoli, while its upper portion is united with the spinal cord. The brain is covered by three membranes the outermost of which, from being of a firmer texture than the others is termed the *dura mater*, and encloses the brain with its appendages, lining also the whole internal surface of the cranium. Its outer surface, which adheres to the bones of the cranium, as the periosteum does to the other bones, is rather rough and irregular, but the inner surface is smooth and shining, and is lubricated by a fluid which is secreted by it. This membrane is the densest and strongest of the whole body, its component fibres interlacing each other in all directions. It sends off several folds or processes, which descend between certain portions of the brain. The principal of these is the superior longitudinal process, or *falx cerebri*, as it is termed, from its supposed resemblance to a sickle or scythe, which extends from the fore to the back part of the skull, and, descending into the substance of the brain, divides it into

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two portions, called the right and left hemispheres. Where it terminates behind, there is a large lateral expansion of the same membrane, extending across the back part of the skull, and separating the cerebrum from the cerebellum. It is called the *tentorium cerebelli*. From the middle of the tentorium another membranous expansion takes its rise, and descending downwards between the lobes of the cerebellum, terminates at the edge of the foramen magnum, or great occipital hole. It is termed the *falx cerebelli*. The second, or middle, of the three membranes is an extremely thin and delicate substance and from its fancied resemblance to a spider's web it receives the name of *arachnoid*. It is transparent and colourless, and is spread uniformly over the surface of the brain. The third investing membrane, the *pia mater* is also very delicate and tender but differs from the arachnoid in its abounding in blood vessels, whereas no blood vessels have yet been discovered in the latter. The blood vessels with which every part of this delicate membrane is covered are the nutrient arteries of the brain. They subdivide and ramify to an extreme degree upon the surface of this membrane, so that the blood may enter the surface of the brain or lie in very minute quantities. As the pia mater contains and supports the nutritive vessels of the brain, it is not only, like the others, spread over its entire surface, but it also penetrates between all its convolutions, and lines every cavity which it contains.

The nervous matter of the brain is composed of two distinct substances, differing from each other both in colour and consistency. One of them is the *grey or cerebriform substance*, termed also white, as it forms the outer covering as in the cerebrum and cerebellum, the cortical substance from its surrounding the inner part like the bark of a tree. It is of a softer consistency than the other, and is composed almost entirely of blood-vessels, connected and sustained by exceedingly fine cellular membrane. It forms an outer covering to the entire surface of the cerebrum of generally about one tenth of an inch in thickness. The *white or medullary substance*, which constitutes the internal portion of the cerebrum and cerebellum, is of firmer consistency, and is composed of microscopic fibres arranged into laminae and bundles, between which intervening vessels ramify. In the cerebrum these fibres run, in general, in such a direction as to converge towards the base of the brain. The brain proper is divided into two lateral halves, termed hemispheres, separated from each other through a great portion of their extent by the great longitudinal fissure, into which is inserted the *falx cerebri*. This fissure, both before and behind, passes quite through to the base of the cerebrum, but in the middle

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it is interrupted by a transverse portion of white substance, termed the *corpus callosum*, which connects together the two hemispheres. Each hemisphere is subdivided into an anterior, middle, and posterior lobe, but it is only on the under surface of the brain that these lobes are properly marked off. The anterior and middle lobes are separated from each other by a deep fissure, named the *fissura sylvia*, which extends obliquely backwards to a considerable depth. The middle and posterior lobes are not so distinctly marked off; but anatomists regard as the posterior lobe that portion of the cerebrum which lies over the cerebellum. The surface of the cerebral hemispheres presents numerous tortuous eminences, named convolutions, or *gyri*, which are separated from each other by deep grooves or furrows, termed *sulci*. These are generally about an inch in depth, but they vary considerably in different brains, and even in different parts of the same brain; and, indeed, those of one side frequently differ from those of the other. The convolutions are more marked as the brain is better developed, and are more numerous and manifest in man than in the lower animals. As the cortical substance of the brain is continuous over the whole surface of the hemispheres, in the fissures as well as upon the convolutions, it follows that the greater the number and depth of these, the greater is the superficial extent of the grey matter which is generally regarded as the seat of all the nervous manifestations, as sensation, volition, &c. The *corpus callosum* is formed by the converging fibres of the two hemispheres, whence it has been termed the *commissura magna*, or the great commissure of the brain. Under the *corpus callosum* are the two great cavities termed the *lateral ventricles*, distinguished into right and left. They are very irregular in shape, and are described as each consisting of a body and three horns, or *cornua*—the anterior, posterior, and middle. They are separated from each other by the *septum lucidum*, which descends from the lower surface of the *corpus callosum*, and consists of two laminae, between which is the very small cavity of the *septum lucidum*. It rests upon the *foramen*, a triangular medullary body, having its apex directed forwards, and its base backwards. Posteriorly it is connected with the *corpus callosum*, and it divides laterally into a posterior cornu on each side, which terminates in, or rather is continuous with, the *tarsus hippocampi*, and the *hippocampus major* and *minor*. The sides of the *foramen* slightly overlap the optic thalami, while its inferior surface covers the third ventricle, from which it is partly separated by the *velum interpositum*. The third ventricle is a small narrow cavity lying between the *optic thalami*. These last are two large firm ob-

Brain.

long bodies, nearly an inch and a half long, by three-fourths of an inch wide and deep. Anteriorly the optic thalami are continuous with the *corpora striata*, and posteriorly they are connected by small peduncles with the pineal gland, and with the pines. The *corpora striata* are two grey pear-shaped bodies, but internally they are streaked with white matter,—whence their name. The *pineal gland* is a small portion of grey matter about the size of a small pea. It was supposed by Descartes to be the seat of the soul. The *corpora quadrigemina* are four small white round bodies, intimately connected with each other, of which the anterior and superior pair are called the *tears*, the posterior and inferior being named the *testes*. The anterior commissure is a medullary band uniting the *corpora striata*; the middle commissure is composed of grey matter, and connects together the two optic thalami, as does also posteriorly the posterior commissure, which is a rounded white cord. The *crura cerebri* are two short, thick, rounded cords, connecting the optic thalami with the pons Varolii. They are composed principally of medullary matter, but in their interior is a somniferous mass of dark grey matter.

The *cerebellum*, or little brain, consists of a body and three pairs of *crura* or peduncles, by which it is connected with the rest of the encephalon. It is not covered with convolutions like the cerebrum, but appears to be formed of a number of lamellæ, or plates, with sulci between them. When cut across, the grey and white matter are seen to be arranged somewhat in the form of a tree, the white substance forming the stalks, and the grey the leaves; and hence it has been termed *arbor vita*. The two peduncles of the cerebellum connect it with the testes of the cerebrum, and are known as the *processus e cerebello ad testes*; the inferior peduncles—*processus e cerebello ad medullam*—pass downwards to the back part of the medulla oblongata, and correspond with the *restiform bodies*; the middle two are the *crura cerebelli*, which pass from the middle of the cerebellum, round the outer side of the *crura cerebri*, and meet in front in the pons Varolii, constituting its transverse fibres. The space between the cerebellum behind, and the medulla oblongata in front, is named the *fourth ventricle* of the brain, or the ventricle of the cerebellum. The *pons Varolii*, or annular protuberance, is a comparatively small portion of the brain, and occupies a central position on its under surface, above and in front of the medulla oblongata, with which it is continuous. It consists of transverse and longitudinal white fibres, interspersed with a quantity of diffused grey matter. The transverse fibres, with few exceptions, communicate with the cerebellum by means of the middle *crura*; while the longitudinal fibres are

Brain, Diseases of the

those which descend from the medulla oblongata into the canala cerebri. The medulla oblongata is that part of the encephalon which is immediately connected with the upper end of the spinal cord, and has an inclination obliquely downwards and backwards towards the foramen magnum. It is pyramidal in form, tapering towards its connection with the spinal cord. It is marked longitudinally by an anterior and posterior fissure, which are continuous with those of the spinal cord and by which it is partially divided, like the cord, into two internal and symmetrical halves. On the upper part, however, a new arrangement takes place, for, on each side of the median line, the lateral fissures disappear, and the surface of each half of the medulla presents four eminences or columnæ, which, commencing at the anterior fissure, and proceeding backwards in the direction of the posterior fissure, are met with in the following order, — the anterior pyramids, the olfactory bodies, the posterior pyramids, and the posterior pyramids. From the under part of the brain issue a number of nerves, known as the cranial and passing through foramina in the bone of the skull. They are usually reckoned as forming nine pairs. (See NERVIS.) The following are the proportions of the different substances that compose the grey and white matter of the brain —

	White
Water	730
Albuminous matter	75
Colomless fat	10
Rcd fat	17
Osmic acid lactates	14
Phosphates	10
	—
1000	100

See Quain's "Anatomy," Carpenter's "Human and Comparative Physiology," Solly's "On the Brain," Todd's "On the Brain and Nerves," Davelich, "Schädelkunst und Seelen des Menschen und der Thiere," auch Alter, "Geschlecht und Race," Jena, 1864.

BRAIN, DISEASE, OR TEE — The brain, which is the most delicate and exquisitely formed of all the organs of the human body, is subject to a great variety of disorders, most of which will be treated of under their proper heads; but some it will be necessary to notice here. Inflammation is one of the most common diseases to which the brain is subject and may result from a number of causes — from external injuries, a blow or falls the symptoms of which may not manifest themselves for many days, from the improper use of narcotics or stimulants, exposure to cold or the action of the sun's rays, protracted study, excessive joy, or other mental emotion, as well as from disease from disengagement of the digestive or other organs of the body. It is characterized by more or less violent pain of the

Brandy

head, suffusion or prominence of the eyes, the countenance generally tumid or flushed, and delirium or stupor, with, usually, nausea and vomiting. In the treatment of this disease, general and local bleeding are usually had recourse to, the latter by means of leeches applied about the head, or by cupping. A cooling and sedative medicine should also be employed, and the bowels kept freely open by purgatives. The head is also usually shaved, and kept cool by being wet with cold or iced water. Frequently, in children, induration leads to a form of disease known as water in the head, or hydrocephalus (which see). Softening of the brain is caused by want of a proper supply of nourishment to the cerebral substance, and may arise from various causes. It is characterised by lowness of spirits, headache, giddiness, the loss of memory, and at length imbecility and paralysis. Unfortunately, this is a disease which little can be done to remedy, especially when it results from a disordered state of the mind or its functions, as from disease or obstruction in the arteries which convey the blood to the cerebral substance. Frequently it is occasioned by over anxiety or excessive study in which case everything is to be done to get rid of the predisposing cause. Every thought, every mental effort destroys a certain portion of the cerebral matter, and hence, if destruction takes place more rapidly than renewal, wasting or softening of the brain is the result. The blood vessels, particularly in the aged are also liable to be ruptured. (See APOPHYSIS, COMA, CONVULSIONS, EPILEPSY, INFLUENZA, DILATUM TRABINUS, PARALYSIS.)

BRAN is in the skins or husks of corn, esp. oily of a heat ground, separated from the corn by a sieve or built up. As it contains a large amount of albuminous matter, its rejection from the skin is regarded by some as a loss of nutriment. It has been found that dogs can live on bran bread, though they cannot flour bread. Bread made by unbolted flour is often used as a laxative article of diet in dyspepsia. Bran contains per 100 parts, 13*i* of water, 19*s* albumen, 4*z* oil, 1*z*6 husk and a little starch, 7*z* saline matter (ash). Bran heated in an oven, or frying pan, and put into a bag, is an excellent application to severe local pains. Its virtue is increased by being freely sprinkled with water during the process of heating.

BRANDY, brand'-de, a spirituous liquor, separated from wine by distillation. The word is derived from *branwijn*, a German word signifying *burnt wine*. It is prepared from wine in most wine-growing countries, but France, and, most notably, the town of Cognac, in the Charente, has always been considered the great brandy-producing lo-

Brassicas.

CALY Cognac brandy is esteemed from the absence of a certain very flavour found in other brandies, which is caused by a very small quantity of an acrid oil contained in the skin of the grape. Brandy, when newly distilled, is as clear and as colourless as water, but on being put into oak casks it acquires a yellowish brown colour, from dissolving a portion of tannin contained in the wood. This colour is generally removed in inferior kinds by the addition of a small quantity of camphor, or burnt sugar. British brandy, which has been the subject of numerous patent, is an attempt to produce, by artificial means, a spirituous liquor bearing a close resemblance to foreign brandy. The best malt spirit is flavoured and coloured by various substances, such as French plums to oak shavings, each manufacturer having his own favourite receipt. The quantity of brandy annually made in France is about 20,000,000 gallons, of which about 2,000 are imported by England. Chemically speaking, brandy consists of spirit of wine colour'd by tartar or burnt sugar, and flavoured by a small quantity of volatile oil that passes off during distillation. As a medicine brandy is considered the least form in which alcohol can be administered. In moderate quantities it is a diuretic stimulant and tonic. In great debility or depression in advanced stages of fever and the like, brandy is of the greatest service and often affords relief when other remedies fail. The frequent and full use of brandy or other alcoholics stimulates, however, injurious to the system.

BRASSICA [*Brassica*, from *Irene*, the Celtic name of the cabbage] in Bot., a genus of plants belonging to the mustard family, and containing several species, which are commonly cultivated as food for man and cattle. *B. rapa* is the common turnip. The species *B. campestris* is regarded by some as the source of the Swedish turnip, but others consider this vegetable to be a hybrid between *B. campestris* and *B. rapa* or *nappa*. The species *B. oleracea* is supposed to be the common origin of all the different kinds of cabbage, cauliflower, broccoli, and kohlrabi; the latter two varieties having been produced by the aid of the gardener. *B. oleracea* and flowers are deformed inflorescences, the kohlrabi is produced by the stem enlarging above the ground into a fleshy knob resembling a turnip. On comparing the original plant as found on our shores, with wavy green leaves, no appearance of head and flower, like wild mustard or charlock, say with the red cabbage or the cauliflower, the difference is astonishing.

BRASERA, *bras'era*, in Bot., a genus of plants belonging to the nat. ord. *Rosaceae*, sub-ord. *Rosa*. The only interesting species is *B.anthelmintica*, a native of Abyssinia,

Breast.

the flowers of which constitute the drug known as Kouso or Cheso, which has lately been employed in both France and England with considerable success for expelling tapeworm. The flowers are apetalous and dioecious, and are import'd in a dry state. The mode of administering the Kouso is peculiar. About half an ounce is infused in a glass of warm water, and taken thus, flowers and water together, on an empty stomach.

BRIAD, *bred* [Ger. *brod*, m., Ang. *Streyed* from *stry*, to pound in a mortar], a very important article of food, made by baking, in an oven or pan, a mass of dough composed of the flour of different grains mixed with water. Bread is made from the flour of any of the cereals—wheat, rye, barley, oats, &c., but as wheat is the most nutritious grain, it is most generally used (see *Flour*). Brown bread is made from whole meal in which the husks have been ground up with the rest of the grain. It is considered to be much more nutritious and wholesome than ordinary white bread. Bread is adulterated with various substances, as potash, rice flour, alum, salt, carbonat of magnesia, also chalk, bone dust, plaster of Paris, white clay, &c. These adulterants are detected by chemical tests. When wheat flour is adulterated with rice flour, barley flour, or any other inferior flour the adulteration can be discovered readily with the microscope. The presence of mineral substances can also be ascertained in the same manner.

BRIAN LILLY (S. *Ariolus lacer*)

BRIAD POULTRY, thus directed to be made.—Put half a pint of hot water into a basin, add as much crumb of bread as the water will cover, then place a plate over the basin and let it remain for about ten minutes. Separate the bread from the water, or if necessary chop it a little with a knife and strain off the water by holding the knife on the top of the basin, but do not press the bread, then take it out lightly and spread it about a third of an inch thick on a clean apron, and lay it on the pout. It is in effect application to burns, scalds, &c. conditions, ulcerous ulcers, &c.

LIPASE [*lips* + *ase* *breast*], in Anat., is a term applied to the whole of the anterior part of the thorax. In a more restricted sense it is applied to the two lobular fleshy protuberances adhering to the anterior and lateral regions of the thorax of females and containing the mammary or lacteal glands. On the middle of each breast is a projecting portion termed the *areola* or nipple, in which the excretory ducts of the glands terminate and around which is a colored oval or disc called the *areole*. The use of the breasts is to secrete milk for the nourishment of the newly-born infant. They are composed of common connective tissue and adipose tissue, in which

Breast.

are lodged numerous ducts radiating from the nipple, and afterwards dividing and subdividing into branches and twigs until they terminate in very minute vessels. The enlargement of the breast is one of the signs of womanhood. Their fullest development commences in the earlier stages of pregnancy, and they continue to increase in size until about the time of delivery, when they are filled with the lacteal fluid, which passes readily on suction into the mouth of the child. *Diseases*.—The breasts of females are subject to a variety of disorders, one of the most common of which is inflammation. It may be produced by various causes, as a blow exposure to cold or wet, great mental excitement, excessive accumulation of milk or undue pressure on the parts. It occurs most frequently within the first three months after parturition and is characterized by great heat, pain, redness, and swelling of the breasts. The pain is intense, and of a throbbing nature, and often extends to the axillary glands. The breasts become tense, heavy, and painful to the touch and there is high inflammatory fever. The treatment consists in the application of leeches and warm fomentations to the part, and the administration of purgatives. If the inflammation do not subside in a few days suppuration may be expected. In general the abscess may be left to nature, but when it occasions much pain, it is advisable to get rid of it by a free incision. Chronic inflammation sometimes seats in the breast in which case stimulant applications will be found useful. Where this is attended with abscess it should be opened, so as to give free exit to the pus, and pressure applied to the part. The breast is also subject to various kinds of tumours, some of which may be got rid of by simple pressure and attention to the general health. When large or painful, a few leeches may be applied or a belladonna plaster. Bark, with iodide of potassium, are useful in restoring the general health. Some of these tumours very much resemble cancer, and, doubtless, many of the cures of cancer that we see advertised by quacks are simply cures of this class. In general it is not necessary, and may be highly injudicious, to cut up these tumours. In many cases they remain stationary after reaching a certain stage, in others, they, after a time, disappear. Sometimes some of the lactiferous ducts are blocked up, producing an enlargement termed lacteal tumour. It is to be remedied by puncturing the duct, and keeping it open for some time. Occasionally great pain and uneasiness are felt in the breast from sympathy with other parts of the system. There is no inflammation, swelling, or external alteration of the mamma, and yet the pain is sometimes excessive, usually intermittent. In this case the

Bright's Disease.

general health is chiefly to be looked after. Women are frequently subject to sore nipples after childbirth, occasioning great pain. In such cases care is to be taken to keep the nipples as dry as possible, and an application of glycerine is generally found useful. Nipple-shields of ivory or glass, with india-rubber teats, should also be used when the nipples are too tender to bear the application of the child's mouth. (For cancer of the breast, see CANCER.)

BREATH, *breth* [Sax. *breath*], is the air which is inhaled and expelled in respiration. (See RESPIRATION.) Much can be gathered by the skilful physician as to the condition of the internal organs from the manner of breathing,—if it be short and rapid, slow and laboured, painful, &c. *Fetid*, or *offensive breath* to which some persons are subject, may arise from a variety of causes, and is to be treated in as many different ways. Sometimes it is owing to a deranged state of the digestive organs and in this case purgatives and tonics are to be administered. Occasionally it arises from a diseased condition of parts about the mouth and nose, as decayed teeth, or morbid secretions about the tonsils. In such cases, the teeth should be frequently cleaned, and the mouth should be washed with a weak solution of chloride of lime, or soda. Inhalation of steam from hot water, into which some creosote has been dropped, is recommended in cases in which the cause resides in the nose and respiratory passages. The injection of a lotion of sulphate of zinc or copper, by means of a syringe, into the nostrils will frequently be of use when the disorder has its seat there. (See OZNA.) *Fetid* breath may also arise from a diseased state of the lungs. Where it cannot be remedied it will be well for the patient to chew a little cinnamon occasionally, or take some of the aromatic pills prepared for the purpose.

BRIGHT'S DISEASE, or *GRANULAR DISEASE OF THE KIDNEYS*, *brites*, is a particular disease of the kidneys named after the late Dr. Bright, who first pointed out its nature and character in 1837. *Symptoms*.—It is characterized by gradually increasing debility, with shortness of breath, headache, drowsiness, pallor, and usually puffiness of the face, a frequent disposition to make water, dyspepsia, flatulent distension, with attacks of nausea and vomiting. There is also a remarkable tendency in this disease to an inflammatory or congestive state of other important organs, and hence bronchitis, phthisis, coma, convulsions or apoplexy, not unfrequently occur during its progress. The heart, too, may become implicated, and dropsey almost always occurs sooner or later. It essentially consists in a degeneration of the tissues of the kidneys into fat, by which their secreting powers are impaired, and the urea which should

Brimstone.

be separated from the blood is retained, while the albumen, which is the great agent of nutrition in the system, passes off in the urine. Hence, the existence of albumen in the urine is the distinguishing characteristic of this disease, and is readily detected by its coagulating on the application of heat. Healthy urine contains no albumen, hence, the blood in this disease is poor, thin, and watery, containing much less albumen and fewer red corpuscles than in health. Indeed, there is no disease that so closely approaches hemorrhage in its powers of impoverishing the blood, and exhausting its resources. Hence arises that icthyphlogistic aspect which so strongly characterizes this complaint. Besides this impoverishment of the blood from the impaired action of the kidneys it retains more or less of its urinous excrement, and at length the body is poisoned by the retention of its own excrement. This disease may be occasioned by severe cold, protracted perspiration, or unmoderate use of ardent spirits, and it not uncommonly follows scarlet fever. It may likewise be hereditary. *Treatment*—In the treatment of this disease the diet should be well regulated and intoxicating drinks, sugar starch, and fatty substances, abstained from. The secretive action of the skin should be promoted by means of the warm bath, warm clothing, warm atmosphere, and diaphoretic as Dover's powder. Flannel should be worn next the skin, and exercise, change of air, and sea voyages, are recommended. Cupping over the lungs and warm fomentations are useful in counteracting the more acute forms of this disease. It is necessary also to stimulate the action of the kidneys by diuretics the most valuable of which is said to be the bicarbonate of potass, or cream of tartar. The bowels should be kept in a relaxed state by the frequent administration of purgatives.

Brimstone (See SULPHUR)

BROCCOLI, *brok o l' [Ital., sprout]* the name given to one of the many cultivated varieties of the *Braica aleutica*. It is a common garden vegetable, and differs from the cauliflower only in having coloured instead of white heads. (*See BRASSICA.*)

BROKEN BONES (*See FRACTURES*)

BROMA, *bro'-mə [Gr. brō'ōko, I eat]*, denotes food of any kind that is masticated and hence *bromatology* is a discourse on food, *bromography* a treatise on food.

BROMAL, *bro'-məl*, in Chem., a compound formed by the action of bromine upon alcohol. It is a colourless oil, of spec grav 3.35, and is analogous in its composition and properties to the corresponding compound of chlorine—chloral (which see).

BROMELIA, *bro'-mē'-le-ə [named after Bro-mel, a Swedish botanist]*, in Bot., the typical genus of the nat. ord. *Bromeliaceæ*. The green fruit of *B. pinguin* is used as an

Branchi.

anthelmintic and a diuretic in the West Indies.

BRONMIC ACID, *bro'-mik*, symbol BrO_3 equivalent 120, the only known compound of bromine and oxygen. It corresponds in composition to chloro acid, but has never been obtained in an anhydrous condition. In combination with water it forms a colourless liquid, which first reddens and then bleaches litmus. With bases it forms bromates, which are similar in their properties to chlorates.

BROMINE, *brō'-mīnē [Gr. bromos, a stench], symbol Br equivalent 80, spec grav 2.96*. Bromine is an elementary substance, consisting of a heavy mobile fluid of a deep brownish red colour. It was discovered in 1826 by Balard, in minute quantities in sea water, in which it exists as bromide of magnesium. It also occurs in a native bromide of silver found in Chile, and in union with various alkalies in certain mineral waters. When exposed to the air, it volatilizes rapidly, and boils at 145 Fahr. Its smell is disagreeably pungent, giving rise to a painful spasm of the glottis if breathed. It acts energetically on the skin, producing a sore immediately on contact. At -7° Fahr. it solidifies into a yellowish-brown crystalline mass. Bromine is the only element that is liquid at ordinary temperatures except mercury. The properties of bromine resemble those of chlorine, but they are somewhat less strongly developed. It bleaches vegetable colour and is a non-supporter of combustion. It is slightly soluble in water, giving to it a yellow colour. It combines with water and forms a hydrate which crystallizes in octahedra at 3° Fahr. The principal compounds of bromine are hydrobromic acid, a compound of one equivalent each of hydrogen and bromine. With oxygen, bromine forms only one compound, bromic acid. With chlorine, bromine forms a chloride, a reddish-yellow volatile liquid soluble in water and possessing bleaching properties. Bromide of potassium is used in medicine, being similar in its action to iodide of potassium. It is given in enlargement of the spleen and liver, and swellings of the lymphatic glands. It is also said to possess peculiar narcotic and anaesthetic powers and is used in hysterics, epilepsy, &c. Dose, 5 to 30 grains three times a day.

BRONCHI, *brōn'-kē [Gr. bronches, the wind-pipe]*, the name given to the subdivisions of the trachea, or windpipe, which proceed to the lungs. The trachea divides into the two bronchi opposite the third dorsal vertebra. The right bronchus is larger than the left, and is shorter, reaching the lung on a line with the fourth dorsal vertebra. The left bronchus passes under the arch of the aorta. The structure of the bronchi is similar to that of the trachea, being found and cartilaginous in front, and flat, with

Bronchitis.

muscular and fibrous tissue, behind. On entering the substance of a lung the bronchi divide and subdivide into numerous branches, till they terminate in very minute air-cells.

BRONCHITIS, *bron'ki'tis*, or inflammation of the lining membrane of the bronchial tubes, is one of the most prevalent and fatal diseases in this country. *Cause*.—The great exciting cause is cold, especially when combined with moisture, but whatever tends to diminish the vital vigour of the system, and excites every kind predisposes to it. Any sudden change of temperature is apt to produce it. Damp cloths, or wet feet, are frequent causes of it. It is especially prevalent during the spring months. *Symptoms*.—Its first symptoms are generally those of common cold, accompanied with an occasional cough and a sense of weariness and headache. The cough increases, and there is a feeling of oppression in the chest, and the breathing produces a kind of whooping noise. The pulse is rapid and weak, and there is evident insomia with pain in the limb mortal heaviness &c. If the feverish symptoms increase the breathing becomes difficult from the clogging of the tube with mucus which is, to some extent, expectorated during the cough. In severe cases the symptoms become more and more alarming the breathing becomes so embarrassed that the patient can no longer lie down, but requires to remain in an upright position and use all his muscles in respiration. At last he is so exhausted that he ceases to expectorate and dies of suffocation from the accumulated mucus usually in from five to seven days. Even in less severe cases, the delicate respiratory tubes are frequently permanently injured so that the proper vibration of the larynx is interfered with. *Treatment*.—The great object of the treatment of this disease will be to reduce and remove the inflammatory irritation of the organs, and hence on its first appearance stimuli and stimulating drinks should be avoided, a gentle emollient administered, the feet bathed in hot water, and warm dilute drams a buoyant water or limed tea given. The patient should be counselled to sleep in a house, or even to remain in bed, and an agreeable comfortable temperature should be kept up. A few grains of Dover's powder should also be given to promote perspiration. The victims, however, are chiefly of service at the commencement, when the disease has once established itself it will run its course. Care must especially be taken to avoid cold, so as not to bring on a relapse. Dr. Oliverson recommends as the best means of checking a cold, or bronchitis, a full dose of morphine to be taken on the first or, at least the second night, on going to bed. To breakfast in bed next morning and to keep warm within doors during the day. When the

Bruise

disease is established it may be necessary to have recourse to counter-irritants, as a mustard poultice, or blister to the chest, or even to blood letting and to expectorants or emetics to remove the accumulation of mucus. For this purpose spongiae cantha is recommended. The treatment for chronic bronchitis is similar. Counter-irritants to the chest, opium for the cough and to allay the irritant in the bronchial tubes, and expectorants to promote expectoration. Steel is a valuable drug in such cases, and change of air when the weather and strength permit is frequently attended with the most beneficial results. By injecting a solution of nitrate of silver into the bronchial tubes by means of a catheter first suggested by Dr. Horatio Green of New York, has been found to be very serviceable in allay. Inhalation in asthma &c. (See *Asthma* (cont'd.)

BROMCHOCILLE (See *GOLINI*)

BROMCHOTOMA (See *LACHI TOMA*)

BROOM (See *CITRUS*)

BROMIUM, *bri'mi'um* [*Gr. bremos*, cat thistle] in Pot a gen of plants belonging to the nat ord *Asteraceae* or hollyhock family. The species *B. whitei* sometimes called *Glaucodon iron weed*, is the celebrated pectoral of cow herb of South America it yields a milky juice said to be almost as nutritious as milk from the cow.

BRYCIN or **BRYCINI**, *bry'ci'n*, an alkaloid occurs in large quantity in conjunction with strichnine in the *dryas alaskana* it is less marked in its properties than strichnine which it closely resembles. It crystallizes in colourless transparent rhombic prisms which are insoluble in ether. Its properties probably are less active than those of strichnine. (See *STRICHNIA*)

Bruise, *brui'*, is injury done to the interior of a part by the forcible application of an obtruse body without cutting or rupturing the external integument. The action which sustains a greater or less degree of disruption blood is extravasated and swelling results. If the injury is slight the swelling soon begins to subside and absorption takes place then the discoloration becomes most marked, the blood, as it undergoes absorption, changing a variety of hue to black, or dark blue and then to violet, green, and yellow. Gradually these disappear, and the part assumes its normal condition. *Treatment*.—The treatment is first to avert inflammatory action, and then to promote absorption. In order to the first cold or ice water, or a bladder containing ice should be applied at once, and rest enjoined. Afterwards, when the inflammation has subsided friction, and if necessary, incision or a bandage over the part. In particular the skin should be kept entire, and even bleeding with leeches avoided, at least till the inflammation has subsided. For a slight bruise, as a black

Brunonian System.

eye, the application of a little brandy or spirits of wine will often prevent the diffusion of blood or discoloration.

BRUNONIAN SYSTEM OF MEDICINE, *bru-nō-ni-an*, was founded by Dr. John Brown, a Scottish physician, who flourished towards the end of last century. His system is explained at large in his "Elementa Medicinae," published in 1780. It found numerous supporters, and gave rise to much opposition. According to him, the characteristics of life are sensation and motion; the capability of being affected by external powers is termed excitability; the agents are *stimuli*; or exciting power; the result is excitement. When the *stimuli* act upon the excitability with a sufficient degree of power, there is a pleasant sensation of health; when they raise the excitement above this point, or depress it below it, disease takes place; and when the *stimuli* cease to act, or the system to feel their power, death ensues. The *stimuli* are of two classes—external and internal; the external being heat, light, air, food, medicine; the internal, the functions of the body, muscular exertion, powers of the mind. Excitement is life, and the body has an unceasing tendency to dissolution, which is only opposed by the incessant application of excitement. All *stimuli*, by acting upon the excitability, tend to exhaust it. Our whole life is an alternation of wasting and recruiting our excitability,—of wasting it by day in labour and enjoyment, of recruiting it by night by the abstraction of all stimulating powers. All diseases are of two kinds,—*asthenic*, or diseases of weakness, or dulness; and *athenic*, or diseases of excess of strength. His mode of treating disease, therefore, had for its object merely the increasing or diminishing of excitement, without regard to their particular symptoms. The doctrine, in its original form, may be considered as exploded; but more recently a sect has arisen, principally in Italy, who profess a modification of the Brunonian system, and who are known as Modern Brunonians. They advocate what is known as the *contrastimulant* mode of treatment of disease.

BURRUM, *brū'-mū* [Gr. *brūo*, I grind my teeth], in Med., is the grinding of teeth, or that gnashing and chattering of the teeth which takes place in epilepsy and other convulsive disorders.

BRYONY, *bri-o-ne-a* [Gr. *brūo*, I sprout], in Bot., a gen. of plants belonging to the nat. ord. *Cucurbitaceæ*. The most interesting species is *B. dioica*, the red-barred bryony, or wild vine, an indigenous perennial growing in hedges and thickets, and blossoming during the month of May. The flowers are yellowish-white, with green streaks, and are dioecious; that is, the male and female flowers are borne by distinct plants. The stems are put forth annually, and climb by means of tendrils. The root

Buff.

is large, white, and is sold by herb-drokers under the name of white bryony and mandrake-root. (For the true mandrake, see *MANDRASORA*.) The root contains a peculiar bitter principle, termed *Bryonin*. It is a violent emetic and purgative, and is highly poisonous, giving rise to symptoms much resembling those of cholera. It is stated to be frequently used by quack doctors in the country, and is employed as a topical application to burns.

BUBO, *bū'-bo* [Gr. *boubōn*, the groin], in Med., denotes a swelling of a lymphatic gland, particularly those of the groin or scrotum. It may arise from mere irritation or some local disorder, in which case the bubo is termed sympathetic; or it may arise from the absorption of some irritating matter, as in syphilis, or from constitutional causes. A remarkable instance of general disease giving rise to bubo is seen in the plague, of which this is a feature. Bubos in some cases proceed rapidly to suppuration; in others, the progress is very slow. The treatment should first of all be directed to prevent suppuration, by reducing the inflammatory action by means of purgatives, of tepid applications to the part, and, if necessary, the application of a few leeches. Rest should also be enjoined. When the tendency is to suppurate, this termination should be promoted, and when ripe, the swelling should be freely opened, and the matter discharged.

BUBONOCYCLE, in Med., is a term applied to inguinal hernia. (See *HERNIA*.)

BUCAL, *būk'-kāl* [Lat. *bucca*, the cheek], in Anat., denotes of or belonging to the cheek; as the *buccal artery*, which is a branch of the internal maxillary; the *buccal glands*, small mucous glands, or follicles, situated within the cheek, under its lining membrane.

BUCINATOR, *buk-si-nāt'-or* [Lat. *bucinare*, a trumpet], in Anat., is a muscle of the cheek, so called from being brought much into play by trumpeters.

BUCATE. (See *BAROSMA*.)

BUCKMORN. (See *RHAMNUS*.)

BUCKWHEAT. (See *FAGOPYRUM*.)

BUD, *bud* [Du. *buut*], in Bot., the organized rudiment of a branch or a flower. Buds which produce leaves, and have the power of extending into branches, are called *leaf-buds*; while those which produce flowers only, and are ordinarily destitute of this power of extension, receive the distinctive appellation of *flower-buds*. A leaf-bud usually originates in the axil of a previously formed leaf. Every leaf has one or more of these organs in its axil, either in a rudimentary or perfect state. Within the leaf-bud the future leaves are often very curiously folded, or rolled up, and the different positions which they assume are highly characteristic of different kinds of plants.

BURE, or **BUFFY COAT**, *buf*, in Med., is

Bugloss.

a light yellow, or buff-coloured viscid substance, which is formed on the surface of blood drawn in certain states of disease. Its presence has been frequently regarded as a sign of existing inflammation, but this is very far from being correct as it may result from an opposite condition. It merely indicates that there is an alteration in the relative proportions of the fibrin and the red particles, an excess of the former, which may be owing to a deficiency of the latter, as well as to an increase of the other.

BUGLOSS (*See ANCHUSA*)

BULIMIA, *bü-lim'ē-ä* [Gr. *bous*, an ox, and *limos*, hunger] in Med., denotes an insatiable craving for food. Persons labouring under this disease feel all the effects of hunger, even when the stomach is full. The stories that are told of the quantities of food consumed in such cases are scarcely credible. The real nature of this disease is imperfectly known. In some cases, the health appears to be otherwise good, but usually bulimia is a symptom of other diseases. Sometimes there exists an extraordinary craving for food after the system has been much exhausted, or from a certain condition of the stomach, which causes it to digest the food with too great rapidity but these do not indicate disease but only excessive appetite.

BULIF (*See SKIN DISEASES OF THE EYE*)

BUNION, *bün-yōōn* [Gr. *bou'ion*, an eminence] is a painful inflammatory swelling of the foot, most commonly about the 1st of the great toe. The precise cause of this should usually be the exciting cause, and in order to remedy it, all such pressure upon the part should be avoided. Bleeding by leeches, warm fomentations, or poultices, should also be resorted to in order to remove the inflammation. The swelling may sometimes be considerably reduced by caustics.

BUNIUM *bü-nüm*, in Bot., a genus of plants belonging to the nat. ord. *Umbelliferae*. The species are perennial herbs with usually tuberous and globose roots, square stems, compound leaves, and white flowers. *B. hispidum* and *b. bulbocastanum*, both growing wild in this country, have edible tubers which are commonly known as earth nuts or pig nuts. *B. fistulosum*, a native of Europe, has also edible tubers, which are used as parsnips.

BURSTED PITCH *bür'-gash dī*, a resinous substance used for making plasters. It is prepared from the resin of the spruce fir (*Abies excelsa*), by melting it in hot water immediately after it has been scraped from the tree, and then straining it through a cloth.

BURSTON'S DISINFECTING FLUID (*See Zinc Chloride of*)

BURNS AND SCALDS, *bürnz, skaldz*, are injuries done to the body through excessive heat, burns being produced by fire or heated solids, scalds by heated fluids. Scalds seldom

Burns and Scalds

penetrate deeper than the cutis, burns, on the contrary, may penetrate to any depth. Burns are more fatal in the young and old, than in those of middle life, and are more dangerous on the head or trunk than on the extremities. A burn affecting an extensive surface is more to be dreaded than one which penetrates deeper without extending over much surface. **Treatment**—The best mode of treating burns or scalds is a point on which great difference of opinion exists among surgeons. Some advocate ice, or other cooling applications, others, the use of turpentine and other stimulants. One or other mode of treatment may be best, according to circumstances. Where the injury is not very extensive or severe the parts should be instantly immersed in cold water, and kept there for some hours, or cold evaporating lotions may be applied, an camphorated spirits of wine, sugar of lead lotion, &c., so as to lessen the inflammation. When the inflammation has been arrested by the action of the cold the part should be coated with gum or covered with cotton wool or with flour, to exclude the air. The blisters may be pricked with a fine needle, in order to allow the serum to escape, but care must be taken not to admit the air and on no account is the raised cuticle to be removed. When the cuticle is destroyed and the inflamed cutis exposed, spirits of turpentine, or, perhaps better, a mixture of equal parts of lime water and linseed oil (sometimes called carbon oil) should be used in the first instant. In more serious cases of burning arising from the taking fire or the explosion of gunpowder, &c., the patient frequently, immediately after the accident falls into a state of collapse, occasioned by the shock. He suffers no pain, and the pulse is quick, weak, and scarcely to be felt. Stimulants, as brandy are to be freely administered, to prevent the patient from dying from the shock, and warm lime water and oil or milk or spirits of turpentine, are to be applied to the parts. The collapse may last for several hours, and, if not fatal, is succeeded by a stage of reaction, the patient becomes sensible, the pulse rises, pain begins to be felt and, perhaps, vomiting takes place. When the reaction has been established, the stimulants should be laid aside, and now inflammation has to be guarded against. This stage is characterized by the usual local and constitutional symptoms attendant on inflammation. In the antiphlogistic treatment, now to be adopted, much care has to be observed, as it is necessary to keep up the patient's strength. Poultices may be applied to the deeply burnt parts in order to expedite suppuration and the separation of the sloughs. When the sloughs have separated, and suppuration is established, cauterization commences. The poultices are now to be laid

Burse Mucosæ.

nsides, and moderately stimulating ointments to be applied. Great care is to be taken at this stage to preserve the parts in a proper position, as in circumsion there is a great tendency to contracton, and naturally distant parts may be brought together, and much inconvenience or deformity may be the result. Extensive burns may prove fatal in any stage, and the patient, especially if young, or advanced in years, can seldom be pronounced free from danger until circumsion has been completed. In the event of one's clothes taking fire, it is obvious that the upright posture is not only favourable to the spread of the flames, but allows them to reach the more important parts of the body as the head and neck, whilst running about only tends to increase the power of the flame. The best thing, therefore, to do, is to lie down and roll about on the floor, and if possible to sove the hearth rug, or table cover, and envelop the body in it. The first thing for a person to do in being called to assist on such an occasion is to snatch up a rug, blanket, or other woollen article, and envelop the body of the sufferer closely in it, which will have the effect of extinguishing the flames. In removing the clothes from the burnt parts great care is to be taken not to break any blisters that may be raised, as a great object is to exclude the air from the inflamed surface.

Bursæ Mucosæ *bür-ä' mü-kö-së* [Lif., mucus bags], are small membranous sacs, situated about the joints of the bones, and containing a kind of mucous fat, which serves to lubricate the joints, in order to render their motion easy. These are of different sizes and firmness. *Bursology* is the name given to a description of the *bursæ mucosæ*.

Butea, *bu-të'* named after John, Earl of Bute, a great patron of botanists] in Bot., a gen. of plants belonging to the nat. ord. Leguminosæ sub-ord. Fabionaceæ. The most important species is *B. frondosa*, a native of India. This tree yields an astringent gum, called *butea gum*, which resembles kino in its properties, and is sometimes forwarded to this country undept that name. It is used medicinally in India in diarrhoea, and similar diseases, also for tanning.

Butomus *bu-tö-müs* [Gr. *bous* an ox, *temno*, I cut], in Bot., the typical gen. of the nat. ord. Butomaceæ. *B. umbellatus*, the common flowering rush, is frequent in ditches and ponds in England and Ireland, but is very rare in Scotland. The leaves, which spring from the crown of the root, are from two to three feet long, and of a triangular shape. The scape, or flowering stem, is longer than the leaves, and terminates in a large umbel of rose coloured flowers. The plant possesses acrid and bitter properties, and was at one time, used in medicine. The roasted rhizome is edible. The sharp leaves of the *Butomus* were believed to cut the mouths

Butter.

of the cattle that cropped it—whence the name.

Butter, *but'-ter* [Sax. *buter, butora*; Ger. *butter*, Lat. *butyrum*]—Butter is the fatty part of the milk of animals, separated by the process of churning. Cows' milk is composed of three ingredients,—the cheesy portion, or curd, the whey, or watery part, and the butter. Milk, when examined by the microscope, is found to consist of a number of fatty globules, floating in the whey. These globules, which are little sacs, containing the butter, are broken during the process of churning which allows the liberated fatty matter to aggregate in small masses, and float on the top of the whey. These are generally united by pressure against the bottom of the churn, and the remaining butter milk is given as a drink to pigs. The butter is afterwards spread out in a thin layer in a shallow pan, and washed with clear spring water to free it from any butter-milk that may remain in its pores. It is then formed into rolls, if intended to be sold as fresh, but if it is to be kept for any length of time, it is mixed with salt, in the proportion of three or four pounds of salt to half a hundredweight of butter, and packed in casks for the market. The quality and quantity of butter contained in cows' milk depend mainly on the nature of the pasture. Rich natural meadows afford the best food for cows intended to produce butter. Poor pasture is objectionable, not only from the quantity of butter contained in the milk being diminished, but from its receiving an unpleasant taste from certain plants or weeds growing on ill-drained or marshy soil. Butter is much adulterated with water, salt, lard, &c. The first may be detected by the whiteness of the butter when squeezed, and the last two by small white particles being visible in the newly cut surface of the butter. The consumption of butter in London is estimated at about 15,000 tons annually. It constitutes a wholesome and very nutritious article of food.

Butter of Antimony (See ANTIMONY)

Butter of Tin (See TIN, Bischloride of)

Butter of Zinc (See ZINC, Chloride of)

Butter, Vegetable, a name commonly given to any concrete oil of vegetable origin which at all resembles the butter obtained from animal milk, or which is employed for similar purposes. The most important solid oils or fats procured from plants are—Butter of cacao, from *Theobroma Cacao*, of cinnamon, from *Cinnamomum glanduliferum*,—nutmeg, from *Myrtilia moschata*, of coconut, from *Cocos nucifera*, of laurel, from *Laurus nobilis*, Shea or Galam butter, from species of *Bassia*, palm-oil, from *Elaeis guineensis*, and vegetable tallow, from *Sabicea subspicata* in China, from *Vitex indica* in India, and *Pentadesma butyracea* in Sierra Leone. All these oils contain a large proportion of stearin, and many are used as

Buttercup.

substitutes for animal fat in candle-making. The plants yielding them are frequently termed *butter trees*.

BUTTERCUP (See RANUNCULUS.)

BUTTERMILK, *butter milk* the milk which is left after the butter has been separated by means of churning or other processes. It is ordinarily procured from milk after it has been kept some time, and has become more or less acid, but it may be procured from new milk when it is not acid and only differs from milk by the absence of its oily parts. In this state it is still tolerably nourishing, and, being easy of digestion, is recommended in many stomach complaints, in phthisis, diabetes, &c., being preferable to either the entire milk, or the watery parts of it in a more acid state. The heat of butter milk does not increase the acidity of the stomach, or occasion the flatulency usually generated by vegetable acids.

BUXUS, buk'us [supposed to be from Gr. *gubus*, dense, in reference to the wood] the Box, a gen. of plants belonging to the sub-ord. *Euphorbiaceæ* and consisting of evergreen shrubs or small trees with opposite leaves, entire at the margins, and easily split into two plates. The flowers, which are very small, grow in little axillary clusters, the male and female flowers being distinct but borne on the same plant. There are only two species known, namely, *B. sempervirens* and *B. latifolia*. The former, which is the common box sold in gardens in Britain, is a bush of more than twelve or fourteen feet, but in the south of Europe, it is often twice that height. Many varieties are known in gardens the most remarkable of which is the dwarf box so much used for the edging of walks. The wood of the arborescent *B. sempervirens* is heavier than that of any other European tree, and will sink when placed upon water. The leaves of the common box are aromatic and have been employed medicinally. An empyreumatic oil obtained from boxwood has been used successfully for the relief of toothache.

BYSOMIA, bi'so me'ia in Bot., a gen. of plants belonging to the nat. ord. *Meliphagaceæ* consisting of tall, culmiferous plants, remarkable for their aromaticity. Thus the bark of *B. caesalpiniifolia* is used internally as an antidote to the bite of the rattle snake, &c., for other purposes where an aromatic medicine is desirable. Several species have edible fruits. The fruit of *B. speciosa* is used occasionally in the treatment of dysentery.

G.

CABBAGES. (See BRASSICA.)

CAJUQ or COCONUT (See THEOBROMA.)

CALYXTHIA, kah'leks-thé-a [*Gr. lakkos*, bad news, *hupetis*], is a term used to denote a bad

Cæsalpinia.

condition or habit of body, arising from whatever cause in which the functions are imperfectly performed, and the complexion unhealthy. It is employed by Quillen to denote a certain class of disease in which the general habit is affected, and a change of complexion, with emaciation or morbid enlargement are characteristic symptoms; headache, dropsey &c.

ACACIAH: / *lak-tis* [*Gr. lakkos* balsam, *ekhos*, disposition] in Medicine denotes a bad habit of body, or a malignant ulcer, which resists every mode of cure, as it causes.

CADAVRE, kah'de-vr [Lat. *cado* I kill] denotes a dead body, a body deprived of life.

CADDIE or HABBIT, is scraped human oil used for the dressing of sores.

CADMUM, kahd'me-um symbol (Cd, equiv. lat. 57, 74, sp. grav. 8.5) Cadmium was first discovered in 1817 by Stromeyer, in small quantities in certain zinc ores in consequence of the behaviour of their solutions with sulphuric acid. It is a brittle, metallic and ductile, of a white colour, and when heated emits a crackling sound like tin. It is easily fused, and distilled at a high temperature. It only forms one oxide, CdO which is formed when cadmium is heated in air. It is yellow, brown, or black, according to the temperature to which it is heated. The chloride is soluble in dilute hydrochloric acid. It crystallizes in four-sided prisms. The sulphide, which is obtained by heating a mixture of oxide of cadmium and sulphur, is much used as a pigment. It is of a bright yellow colour but becomes temporarily red on heating it. The only other important salt is the iodide which may be formed by direct combination of sodium and cadmium in the presence of water. It is alterative and astringent but is seldom used but rarely. In large quantities it is extremely poisonous. It is used in the form of ointment 62 grains of the iodide of Cd to 1 ounce of salve to reduce venereal swellings and curdled joints.

CALI, kah'le [*Gr. calos*, probably from the reflecting surface] in Bot. falling earth or soon after development. Thus, a calyx is said to be *caducous* when it falls off before the flower expands, as in the poppy.

CALYX & *THEMIS* [Lat. *caeris*, blind], is the name given to a large blind peach, or calabash, extending downwards from the commencement of the large intestine (see INTESTINES.)

CASIAEFINIA, kah-zee-fé-ne-ah [so named in honour of Cassiusinus, a Roman physician of the 16th century], in Bot., a gen. of plants belonging to the nat. ord. *Lemnaceæ* being the type of the sub-ord. *Cannabinae*. The species are trees or shrubs natives of the warm parts of America and Asia having pinnate or biinnate leaves, showy yellow

Caesarean Operation.

flowers, and stems which are usually more or less prickly. The useful products of the genus are very numerous. The valuable wood known in commerce as Brazil wood is said to be obtained from the species *C. brasiliensis*. The twisted logumes of *C. constricta* are powerfully astringent, and are extensively used in tanning. In commerce they are known as Divi divi, or Lala divi pods. The roots of *C. moringa* and *moringa* are said to be diuretic, and the wood of *C. elata* is said to possess tonic properties. From *C. sappan* an oil is obtained.

CAESAREAN OPERATION, *ca'se-re'an* [Lat. *caeo*, from *caeo*, I cut], in surgery is the extraction of a child from the womb by incision through the parietes of the abdomen and the uterus. It is also called hysterotomy from *hysteris* the womb, and *tome*, a section. This operation has been practised from very ancient times, and in 300 B.C. Extractus *caesareus* Julius Caesar is said to have received his name from his having been brought into the world in this way. The writers, however, only had recourse to this operation when the mother was dead and the child alive, but it is now frequently performed on the living mother. There are two cases in which the operation may be necessary—1, when the fetus is alive and the mother dead either in labour or in the last two months of pregnancy, when the fetus is dead, but must not be devoured in the usual way, on account of the delirium of the mother, or the disproportionate size of the child & when both mother and child are alive, but the very difficult position, such as any of the above, occurs. The operation consists in incising upon the walls of the abdominal cavity the uterus which is also opened until the child is then directly taken from the womb. When it is necessary, the best time for performing it is at the commencement of labour when the strength of the mother is unimpaired, and there is less risk of inflammation. The operation is always one of considerable danger.

CAFFEFINE, or **CAFFEINE** [*C₈H₁₀N₄O₂*], a crystalline alkaloid found in tea, coffee, Peruvian tea and in *guarana*, a species of cacao prepared from the fruit of the *Paulownia sorbifolia*. Tea contains from 2 to 4 per cent of caffeine, coffee but 1 per cent. It is easily obtained from tea by making a strong infusion of the leaves, mixing it with subacetate of lead, which precipitates the tannin and transmitting a current of sulphurated hydrogen through the liquid to precipitate the excess of lead. On evaporating the solution and allowing it to cool the caffeine crystallizes out in long silky needles. It has a weak, bitter taste, and melts at 45°. Water and alcohol dissolve but a small quantity in cold but it is very soluble in boiling water and ether. The fact that caffeine forms the essential principle of three substances

Calcareous.

used by widely different nations is a very curious one, and shows that the craving which it satisfies is natural as it is universal. The use of tea or coffee as an article of diet seems to exercise a very important influence in retarding the waste in the tissues of the body. Its effect on the human system has, however, yet to be fully studied.

CALLPUT (*See MFLALMUCU*)

CALABAHI (*See CRESCENTIA*)

CALAMINI, native carbonate of zinc. (*See Zinc*)

CALAMINTHA, *Calamintha* [Gr. *kalos*, beautiful, *mn* a, mint], in Bot., a gen. of plants belonging to the nat. ord. Labiate. Our species occur staves of Great Britain, and are known respectively by the trivial names of mountain balm, cat mint, basil-balm, and wild basil. The first, which is also termed the common calamint (*C. officinalis*), has aromatic leaves, which are frequently employed by country people to make herb tea, and as a pectoral medicine.

CALAMUS, *Calamus*, a gen. of palmaceous of numerous species, all having very slender stems, which are found climbing over the trees in the forests of the hotter parts of the East Indies. The fruit of *C. Dracaena* is the chief source of the astringent rhubarb-like juice known in commerce as bugon's blood. This completely covers the fruit and is melted or scraped off, and then formed into small cakes.

CALENTUS (*See Aconit.*)

CALAMUS SCRIPTORIUS, *scriptorius* [Lat., a writing pen], in Anat. is a groove or canal with a pen like termination at the bottom of the fourth ventricle of the brain.

CALCIUM, **WATER**—Carbonate of lime dissolved in pure water is the extract of two or three grains to the gill, but when carbonic acid is present it is much more freely taken up. If however the temperature be raised, the carbonic acid escapes, leaving behind a crystalline deposit of carbonate of lime. In nature, enormous crystalline concretions of this kind are formed by water charged with carbonic acid percolating calcareous strata. The stalactite caverns of Derbyshire are instances of this. Most spring water contains carbonate of lime held in solution, which is deposited on the sides of the vessel when the carbonic acid is expelled by heat. In steam boilers this becomes a great inconvenience, and is obviated by adding sal ammoniac to the water. Chloride of calcium is formed, which remains dissolved while the carbonate of ammonium is volatilized with steam. Water containing carbonate of lime in solution, or *hard water*, as it is popularly termed, is therefore softened by means of boiling. Hard water precipitates soap as *stearate* and *maisylate* of lime, forming the well known curdy precipitate. Until the whole of the lime is thrown down, no lather can be formed; hard water is, therefore, very uneconomical for washing

Calcine.

purposes Dr T Clark has devised a very ingenious method of softening hard water, by adding milk of lime. The carbonic acid unites with the lime, setting free the carbonate originally dissolved, and the whole falls to the bottom as a precipitate of carbonate of lime.

CALCINE, *kal'siné* [Lat *calx*, lime], a chemical term, signifying the separation of the more volatile portions of a solid body by means of heat. Thus lime is formed from chalk or limestone by calcination. The older chemists applied the term to the oxidation of metals by heat, thinking it was an analogous process to that just mentioned, they therefore called all oxides produced by heat calx, or calces of the metal, thus calx of tin is what is now called oxide of tin.

CALCIUM, *kal'ye um* (symbol Ca, equivalent 20, spec grav 1.55), the metallic base of the alkaline earth lime. Calcium belongs to the second group of metals and has for its analogues barium, strontium, and magnesium (which see). It is one of the most abundant substances in nature forming a very large portion of the crust of the earth. It occurs in nature in combination with fluorine as fluorspar, with oxygen and carbonic acid as chalk, limestone and marble, and with oxygen and sulphuric acid as gypsum, which is hydrated sulphate of lime. Calcium was first obtained by Sir Humphry Davy by electrolysis, in 1808, but little was known of its properties until Dr Matthiessen formed it by the electrolytic decomposition of a mixture of the chlorides of calcium and strontium. It is a light yellow metal of the colour of gold alloyed with silver, it is rather harder than lead. It melts at 111° heat and is very malleable. It tarnishes in a day or two even in dry air and in moist air it becomes slowly oxidized. The best known compound of calcium is its oxide, lime, which may be obtained in a state of perfect purity by heating pure carbonate of lime to redness. In practice, lime is made by burning common limestone with alternate layers of coal in a kiln. Lime is a white porous, opaque, inodorous, infusible substance, with strong alkaline and caustic properties. It is much used in the arts, for mortar, cement, manure, dung, soap making, leather dressing &c. When water is thrown on it, an equivalent is absorbed, and heat evolved, hydrate of lime (Ca(OH)_2) being the result. Hydrate of lime is commonly called slaked or ejected lime, to distinguish it from anhydrous lime, which is known by the name of quick lime, from its powerful caustic properties. According to the British Pharmacopoeia to form slaked lime, *caes hydres*, take 2 lb of lime and 1 pint of distilled water, place the lime in a metal pot, pour the water upon it, and when vapour ceases to be disengaged cover the pot with its lid and set it aside to cool. When the temperature has fallen to that of the atmosphere, put the lime on an

Calcium.

iron-wire sieve, and by gentle agitation cause the fine powder to pass through the sieve, rejecting the rest. Then put the powder in a well-stoppered bottle and keep it excluded as much as possible from the air. Hydrate of lime is used in the purification of gas, in the preparation of ammonia and bleaching powder in candle-making, soap boiling, cotton printing, tanning, and sugar refining. In the laboratory, hydrate of lime is extremely useful in preparing caustic alkali, and in absorbing carbonic acid, for which it possesses a very strong affinity. Cold water dissolves about $\frac{1}{4}$ of its weight of hydrate of lime forming lime-water. Contrary to the usual rule of solutions, hot water only dissolves about half that quantity. In fact, when lime water, prepared in the cold, is heated it decomposes into crystals which redissolve as the solution cools. Lime water is alkaline to the taste, and turns vegetable yellows brown, and blues green. Exposed to the air it gradually absorbs carbonic acid and deposits carbon ate of lime. In medicine lime water is used as an antacid, and to afford a supply of lime to the bones of sickly children who have not the power of assimilating sufficient lime from their ordinary food to give the necessary compactness to their bone. Lime-water *lcre*, calx, is made by taking 2 ounces of slaked lime and one pint of distilled water and shaking the two together for two or three minutes in a stoppered bottle. After twelve hours the excess of lime will be subsided and the clear solution may be drawn off for use. It should be kept in a green glass bottle with a tightly ground stopper. Dose 1 to 4 fluid ounces. Milk of lime is dried flour mixed with water until a milky fluid is obtained. The principal oxy-salts of calcium are the following—
Carbonate of lime (Ca(OH)_2)—this substance enters largely into the composition of rocks and minerals, the bones of animals, the egg shells of birds, the scales of fishes, and the shells of mollusks. The precipitated carbonate of lime is composed of 5 ounces of chloride of calcium and 13 ounces of carbonate of soda, dissolved in sufficient quantity of boiling water. Dose, 10 to 60 grains. When burnt with excess of air, limestone forms ordinary lime, if, however, the air be excluded, and the heat raised to a considerable height, it fuses without undergoing decomposition, and on cooling, forms a crystalline mass resembling marble. **Chloride of lime** is the name given to bleaching powder, which is prepared by passing a current of chlorine through milk of lime by which means it is obtained in solution, or by passing chlorine over hydrate of lime, which produces it in the form of a moist powder. By exposure to the air hypochlorous acid is continually evolved by the action of the carbonic acid. If an excess of any acid is added, chlorine is

Calculus.

produced. The former property is taken advantage of to destroy the gaseous poisons with which the air of sick rooms and other localities is contaminated. By the action of the carbonic acid of the air, or by the addition of small portions of dilute sulphuric acid, hydrochloric acid is evolved, which *oxidizes* and destroys the innumerable *Phosphates of lime*—There are several phosphates of lime, the most important of which is that obtained from the incineration of bone, which may be regarded as a triphosphate of lime *binary phosphate of lime*, much used as a manure is prepared by gradually mixing bone dust with oil of vitriol, and adding an equal quantity of water between each addition of acid. The mass is allowed to lie in a heap until it is dry, and is then used under the name of *superphosphate of lime*. Its real composition is found to be a mixture of phosphate and sulphate of lime with the mineral matter of bone. *Sulphate of lime* occurs in nature as *gypsum*, *selecite*, and *anhydrate*. Gypsum on being burnt, yields a white powder commonly known as *plaster of Paris* from the best gypsum beds being found near that city. Plaster of Paris, which is anhydrous sulphate of lime, possesses the property of solidifying when mixed with water. *Hydrate of lime* is prepared by passing sulphurous acid through water containing chalk or hydrate of lime in a fine state of division. It is used as a convenient source of sulphurous acid. The various preparations of lime have all more or less of the same medicinal properties. Quicklime, like the fixed alkalies, is a powerful escharotic and irritant. It is also used as a manure in India, with betel juice water applied to suppuring or mucous surfaces, checks or stops secretion and produces dryness of the part. Administered internally it neutralizes acidity of the stomach, diminishes the secretion of the gastric juice, and occasions thirst and constipation. It is hence used as an antacid in dyspepsia particularly when attended with nausea and vomiting and as an astringent in diarrhoea, when the inflammation of the bowels has subsided. After the use of it increases the secretion of the urine and diminishes the excessive formation or deposition of uric acid and the urates. Lime water and milk is recommended as an antidote in poisoning by the common mineral and volatile acids. In large doses lime acts as a poison, producing first a burning sensation in the mouth and stomach, constipation and death. A solution of chloride of lime is recommended as a wash in certain diseases of the skin, and is said to be very successful as a cure for itch, and also for ringworm. A weak solution is also of great benefit in ophthalmia.

Calculus *kal'ku lus* [Lat., dam from *cavare*, a hewstone], is a hard inorganic concretion formed in various parts of the

Calculus.

human body, and bearing a general resemblance in form and composition to stone. It receives various names, from the parts in which it exists, as, *salivary* in the salivary glands and ducts, *pulmonary* in the lungs, *intestinal* in the stomach or intestinal canal, *biliary* in the gall-bladder, *urinary* in the kidneys or bladder, *gouty* in the joints of gouty persons. The most familiar instance of the formation of calculus is the tartar which is deposited from the saliva and mucus of the mouth upon the teeth. The term calculus is, however, most frequently applied to those concretions which are formed in the gall-bladder or biliary ducts, and those formed in the kidneys or bladder. *Biliary calculus* or *gall stones*, are composed almost entirely of cholesterol, with some colouring matter. They vary greatly in size and number, amounting sometimes to hundreds, and even it is said to thousand sandys, but so long as they remain in the gall-bladder they do not usually cause much uneasiness. It is when they pass into the canal by which the bile is conveyed to the duodenum, that they occasion great pain and derangement of the system. The pain occurs in paroxysms, and is generally attended with shivering and vomiting. If the bile be wholly obstructed, jaundice comes on, and rapid emaciation succeeds. The disorder sometimes proves fatal but generally the stones find their way sooner or later into the intestines, and the disturbance subsides. The best remedies are open and hot applications over the seat of pain or a warm bath. *Urinary calculi* or *stone in the bladder*, are concretions formed and existing in the urinary passages. They generally originate in the kidneys and afterwards pass down into the bladder, where they frequently attain a very large size, some having been found to attain a weight of 4 to 16 oz., and even more. While in the kidneys they are termed *renal calculi* and they sometimes remain there permanently and may even attain a considerable size without causing much inconvenience but they may also produce inflammation and abscess, and ultimately cause death. Generally, however, while yet of small size, they pass down the ureters, into the bladder. Sometimes the passing is attended with symptoms similar to those occasioned by the passing of a gall-stone, and similar remedies are to be had recourse to. The calculus having passed into the bladder, is then termed a *vesical calculus*. At first it is attended with comparatively little pain but unless removed or evacuated, it is sure to enlarge and to give rise to one of the most dreadful diseases that can afflict humanity. In the earlier stages much may be done to check the progress of this dangerous malady, but when the calculus is once formed, the only means by which it can be got rid of is by an operation.

Calendular.

The stone must either be withdrawn through the urethra by an instrument, or it must be broken into fragments small enough to be voided with the urine, or it must be extracted by an incision (See LITHOTOMY LITHOTOMY) The different varieties of urinary calculus are thus classed by Dr Wollaston, in the order of their frequency: 1. Uric acid, a calcareous lime called the mulberry calculus, from its dark colour and rough surface, 2. ammonium magnesium phosphate, called also the triple phosphate, 3. phosphat of lime, or bone ash calculus, 4. fusible calculus—a concretion of the first two species, and so called from its fusibility under the blowpipe, 5. the mixed calculus, composed of several of the other kinds confusedly mixed, 6. urate of ammonia, 7. carbonate of lime, 8. cyste oxide, 9. xanthine oxide. The last three are extremely rare. Many of the calculi are, indeed, nowt of them, are not of one uniform composition, but consist of clusters of two or three varieties, no forming a nucleus for the other deposits, and calculi thus formed receive the name of alternating. Uric acid is more common as a nucleus than any other substance. Urinary calculus is more frequent in some districts than others, and locality likewise influences the species of the stone. It is particularly prevalent in Norwich while there are other large towns in which it scarcely occurs. In some families it appears to be hereditary, and especially in those who are also subject to attacks of gout. It is much more common among males than females, and children and infants are particularly liable to it. The predisposing causes of it however are still very imperfectly understood. *Treatment*—The treatment should be directed to prevent the formation of calculi, 1. to retard its progress, 2. to fit it to expel it when formed and 3. to relieve the sufferings of the patient. Particular attention should be paid to the renal health. The diet should be nutritious, but not stimulating or rich, the digestion promoted and strengthened by tonics, active exercise encouraged and the secretions by the skin encouraged by warm clothing, warm baths, and the flesh brush. When the calculus is composed of uric or lithic acid, or when the predominance in the urine, the alkaline bicarbonate as the bicarbonate of soda, in 10 grain doses, three or four times a day, should be administered. On the other hand, should the urine exhibit an alkaline state acids will be found useful. The 'Vit'hy water, a solution of bicarbonate of soda saturated with carbonic acid is strongly recommended in both cases, as by virtue of its carbonic acid it counteracts alkaline formations, and by virtue of its alkaline, acid formations, while it also disengages the animal matter which cements them together.

CYLINDRICAL, kal'-en-dro-l, in Bot., the

Calotropis

Mangold, a gen. of plants belonging to the nat. ord. *Composita*, sub ord. *Lubiflorae*. The species *C. officinalis* is the common Mangold. Formerly, many medicinal virtues were ascribed to this plant, and its flowers were usually added to soups to colour them, and also to act as "comforters of the heart and spirits." Saffron is frequently adulterated with the yellow florets of the mangold.

CALENTURA, kal'-en-tu-ra [Lat. *calo*, I am hot], is a term derived from the Spanish, and applied to a violent ardent fever common among sailors in very hot countries. It is so called either as being accompanied by a burning heat, or as resulting from the great heat of the climate.

CALF 4-1000 Jellit is made by extracting the gelatinous portions from the tendinous structures of the leg and knee joints of the calf by long boiling, sugar, wine, or oil and spices are added to the jelly thus obtained. This forms a palatable and easily digested article of food for convalescents, and may be taken with a cold or dissolved in warm water.

CALIGA, kal'-e-go [Lat. darkness] is a term employed to denote dimness or obscurity of vision, and hence it forms part of the name of various diseases of the eye attended with dimness or loss of sight, as *caligo cornuta* & *caligo hordealis* &c. (See BLINDNESS EYE.)

CALIPER, kal'-per, the name of an instrument used by physiologists for measuring the dimensions of the head.

CALMINTIC, kal'-min-th [Gr. *kalos*, beautiful; *melite* strength] the science or practice of exercising the limbs and body for the purpose of strengthening the muscles and acquiring a nice graceful carriage (See EXERCISE).

CALLOWAY, kal'-o-wé [Lat. *callowas*] is an induction of hardness of the skin, as that of the hands, through hard labour.

CALUS, kal'-us is the bony matter which is deposited between the fractured ends of broken bones, and serves to reunite them (See FRACTURE).

CALOMEL, kal'-o-mel [Gr. *kalos*, good, *melas*, black] from the qualities and colour of the Lithop's mineral to which the name was originally applied] chloride of mercury (See MERCURY, Chloride of).

CALOS MORDICANS, l" or mort-de-kunz [Lat. biting heat] is applied to a particular kind of heat that sometimes attends typhus and other fevers, and is considered a dangerous symptom. It is biting and pungent, rather than burning, and leaves a smarting sensation on the finger for several minutes after touching it.

CALORIC (See HEAT)

CALOTROPSIS, kal'-o-tróf-sis [Gr. *kalos* beautiful, *trepos*, keel, in allusion to the keel of the flower], in Bot., a gen. of tropical plants belonging to the nat. ord. *Asteliaceae*. The species *C. gigantea* or protracta yields the

Caltha

medicinal bark known as Mudar bark which has been much employed in India for the treatment of cutaneous affections. It is aperient, purgative, and diaphoretic, and is occasionally used as a substitute for senna; cuncti. It contains a peculiar principle called mudarine. The bark of the root of *C. Hamiltoni* has similar properties and is said to yield the fibres termed *Firni*.

Caltha palustris [Linn. *Calathos a gallo*] in Bot. a gen. of plants belonging to the nat. ord. *Ranunculaceæ*, tribe *Hilleboræ*. The species *C. palustris* commonly known as the Marsh Marigold, grows wild in marshy places, and it is showy bright yellow flowers.

Caltumba [*Calumba* or] the name given to a root very extensively used in medicine as a stomachic and mild tonic. It takes its name from Colombo, in Ceylon where it was first brought. In powder the dose is from 5 to 10 grains. The infusion is formed by macerating in a covered vessel for one hour half an ounce of calumba root cut small in fine pieces of still water until they strain. Dose 1 to 2 fluid ounces. The tincture is given in doses of 1 to 2 fluid drachms and the extract in 2 to 10 drachms. (*Sedatothorax*)

Calyx [*Calix*]

Calyx [*Calix*] in Bot. the external envelope of the flower. It is composed of small fleshy leaves called *sepals* which are usually green. Within the whorl of 4 petals it is generally another whorl of leaves called the *calyx* (which see) but sometimes the calyx is the only envelop of the parts of the flower. The calyx may either consist of a number of separate epiphyses as in the poppy, buttercup and willowherb or these parts may be more or less united as in the lily, marigold and tobacco. In the former case the calyx is termed *polychylous* or *polyphyllous*, in the latter *monozygous*, *monozyllous* or more correctly *gemes*, *didynamous* or *gamophylloous*. When the sepals are equal size and like form and arranged in an symmetrical manner the calyx is said to be *regular* when they are of different sizes and forms, it is *irregular*.

Cambium, [*Cambium*] [Lat. *cambium*] a change in Bot. a layer of vitally alive cells placed on the outside of each annual zone of wood in an exogenous stem. It is from this that the new layers of wood and fibers are formed. The cells of which it is composed are of a very delicate nature, each consisting of a thin wall of cellulose, within which are situated primordial nuclei, a nucleus, and abundant protoplasm. (*See Cell*)

Camboge, imp., &c. by *Gamboge*, *kam-boe*, a gum resin exuded by one or more species of *Garcinia*, trees found principally in Sumatra. It is soluble in alcohol, and forms an emulsion with water. It acts, when swallowed, as a powerful drastic purgative. It is highly

Camphor.

recommended as a hydragogue in dispersions, combined with ergotin of tartar. It is also used as an antiseptic, usually in combination with calomel, soap, &c. A very common form of administering it is the *phiala camphora composta* or compound pill of camphor composed of 1 ounce each of camphor in powder, birches, aloes in powder, and compound powder of camphor, 2 ounces of hard soap in powder and a sufficient quantity of syrup to form a uniform mass. Dose, from 5 to 10 grains. Dose of simple camphor 1 to 5 grains. A specimen of *C. camphora* analyzed by Dr. Christison contained 74 per cent of resin and 22 per cent of arabin the rest being moisture. It is used as a medicine must be carefully regulated, as the slightest overdose causes violent purgation and vomiting.

Camomile (*S. Anethemis*)

Campanula [*campana*] [Lat. a little bell] in Bot. the bell flower, a gen. of plants forming the type of the nat. ord. *Campanulacæ*. It includes several British species, which are known to all lovers of wild flowers thus *C. rotundifolia* is the hedge bell, *C. glomerata* the clustered bell, *C. sativa* and *C. apuleia* the campions. The fruits of the latter species are often in some part.

Cannabis [*Cannabis*] or *Dabid Jam*, *phen* a product obtained from turpentine. By acting on it by heat with hydrochloric acid hydrochloride of cantharidin which is transformed into a sulphide by the introduction of the hydrochloric acid by the usual quenching.

Cannibent, *cantharidin* a name applied commercially to a pair of extracts of oil of turpentine which is said to be furnished by the *Petroleum* of the south in states of America.

Cannibens, *Cantharis* a genus of hydrocarbons which when treated with hydrochloric acid form arachidic acid or resins. They include oil of turpentine, oil of lemon, oil of lime and one or two others.

Camphor [*Kamphogen*, *Ash*, *Aspidoor*] a solid crystalline substance found in many plants though only obtained in quantity from two namely *Camphora obtusa* and *Dryobalanum aromaticum*. This is made an extract in two provinces, China or India and Japan yielding almost all the camphor of import in commerce. The camphor which may be regarded as a solid volatile oil is distilled through the cuttings plant and is separated from the root, trunk and branches. The epiphyses are cut into chips, and boiled in water till the camphor begins to adhere to the stirring-rod when the liquid is strained and allowed to stand until the camphor concretes. It is then submerged into inverted straw cones containing within the epithelial capitals of the stalks. It is generally in small granules, slightly sparkling grains, which, by a great

Camphor

gation, form crumbling cakes. Refined camphor is prepared by nursing the crude product with lime, and subliming it into thin glass vessels of a peculiar shape which are afterwards cracked so as to obtain the camphor in concavo convex tablets, each about three inches thick, with a hole in the middle. Camphor is colourless and translucent, and has a strong penetrating aromatic odour, and a bitter, rather pungent taste, though leaving a sensation of coolness in the mouth. Its specific gravity is from .88 to .99 so that it floats upon water, and, evaporating while doing so, undergoes a curious rotary movement. It volatilizes slowly at ordinary temperatures, melting at 38° Fahr. boils at 40°, and burns with a bright flame. It is soluble in alcohol, other oils and dilute acids, also to a certain extent in water. Camphor is used in medicine, both internally and externally, as a temporary stimulant. In moderate doses, it increases the fulness of the pulse, raises the temperature of the body, and operates as a sudorific and hence it is frequently employed in fevers, especially of the typhoid type, particularly in combination with opium and other diaphoretics. It also acts as an anodyne allaying nervous irritation and producing quietude and placidity of feeling, and hence it is used in mania, melancholia and other forms of mental disorder. In large doses it produces lassitude, giddiness, confusion of ideas, disordered vision, now in the eyes, stupor, delirium, and convulsions. Dose, 1 to 10 grain. Camphor water is made by macerating half an ounce of camphor enclosed in a muslin bag for at least two days, in a gallon of distilled water, in a stoppered bottle the camphor being kept at the bottom of the bottle by means of a glass rod. Dose, 1 to 2 fluid ounces. The spirit of camphor is composed of 1 ounce of camphor dissolved in 9 fluid ounces of rectified spirits. Dose, 10 to 30 minims. The common tincture of camphor is composed of 4 grains each of opium in coarse powder, 10 benzoin, 10 grains of camphor, half a fluid drachm of oil of anise, and 1 pint of proof spirit macerated for seven days in a close vessel and then filtered, adding sufficient of proof spirit to make 1 pint. Dose, 15 minims to 1 fluid drachm. Camphor also forms a constituent in a number of liniments and several ointments. Raspail the founder of a peculiar system of medicine widely adopted in France, elevates camphor almost to the dignity of a universal medicine. The alcoholic solution of camphor, and the liniments of which it is the principal ingredient, are much used for external application in sprains and bruises, chilblains, and chronic rheumatism. Insects are kept from attacking specimens of natural history by placing pieces of camphor in the cases in which such specimens are preserved.

Cancer

CAMPHORA, *kam' fo' ra*, in Bot. a gen. of plants belonging to the nat. ord. *Lauraceæ*. The most interesting species is *C. officinalis*, the camphor tree, a native of China, Formosa, and Japan, where it grows to a considerable size. It is an evergreen, and all parts emit a camphoraceous odour when bruised. The wood is white, light, and durable, and is much used in China for carpenter's work. From the roots, trunk, and branches of this plant, the common or *officinalis* camphor is obtained (See CAMPHOR.)

CANAL, or CANALIS [Lat. *canna* a reed] is applied to many parts of the human body. *Canalis arteriosus* is a blood vessel in the fetus, which unites the pulmonary artery and the aorta, but which disappears after birth. *Canalis venosus* a canal which in the fetus conveys the blood from the vena porta of the liver to the ascending vena cava. *Canalis nervus* a canal going from the internal canthus of the eye downwards into the nose.

CANARIUM *ki' nai r um* in Bot. a gen. of plants belonging to the nat. ord. *Amyridæ*. The species are natives of the Spice Islands and parts of Asia. *C. commune* is cultivated for the sake of the kernels of its fruit, and for the fragrant resinous substance which exudes from its bark. The latter probably constitutes the Manila lacca of commerce. *C. micracarpum* yields an oil very like copaiba, known in shipbuilding yards as Dammar. Other species produce edible fruits, useful oils and resins.

CANARY WINE — This wine which is also known by the name of Lenapilli, is a product of the Canary Islands. In taste it resembles Madeira, it is made from grapes which have been gathered before they are ripe and, when it is a sour and unpleasant taste. After being kept carefully for two or three years its mildness increases greatly and, like Madeira, it is greatly improved by a journey to the tropics. More of it is produced on the island of Teneriffe than on the other Canary Islands. The name of Canary is only applied to the Badoone wine and never to the Malvoisie or Malmsey of the Canaries.

CANCELLI *k' n sel li* [Lat. *lattice work*], in Anat., is applied to the spongy or reticular substance of the bones (See BONES).

CANCER [so called from the large blue veins which appear in cancer, to resemble crab's claws] is a disease of a very malignant character, making its appearance as a scurvyous tumour, which ultimately terminates in an ill conditioned and deep ulcer. Any part of the body may be the seat of this disease though the glands are most liable to its attack. The female breast, the tongue, or lips are among the parts most subject to it. *Appearance* — The tumour at first is small, hard, indolent, and nearly insensible, with little or no discoloration of the sur-

Cancer.

rounding skin. It remains in this state for a longer or shorter period, sometimes for years, but at length it passes into a more active condition—the tumour increases in size, the skin changes to a livid or red appearance, and pain begins to be felt in it. The pain which is of a shooting or lancinating nature is at first slight and occurs at considerable intervals, but it increases by degrees, and the intervals diminish until it becomes almost constant. The cutaneous veins become turpid, and the surface of the tumour presents to the feel a knotty uneven surface. Sometimes the skin never actually breaks but usually after a longer or shorter period the tumour ulcerates and becomes an open sore. The discharge is of a thin liquid acrid nature which corrodes the surrounding parts. The sore presents thick jagged edges, and a soft centre filled as it were with irregular cells. The shooting pains are now much increased and are of a very violent nature. The disease pursues its onward course sometimes it seems as if it had exhausted itself and was allowing nature to work a cure by the formation of new flesh; but if this is merely a delusion for it soon recommences its destructive course, and at length it may be seen it seized upon some vital organ, or the patient sinks exhausted by the pain and continues drawn up in his system. Of the cause, time, or treatment of this terrible disease little is unfortunately known. By some it is regarded as constitutional, by others as local, some maintain that it is hereditary others that it may be transmitted by inoculation. As far as may be judged from the conflicting evidence on these points, there does seem in general to be a certain constitutional predisposition to this disease, though according to Mr. Paget only a sixth of the cases can be traced to any hereditary transmission. The evidence is against its being transmitted by inoculation. If cancer be at any period merely a local disease, it can only be in its earliest stage for in a short time the whole system seems to be infected with it and hence it is that, after a time the extirpation of the original tumour so often fails in effecting a complete cure. Though all ages and both sexes are liable to this disease the young are less frequently attacked by it than the old and females are more subject to it than males. Though cancer is, unfortunately, by no means uncommon, it is not all, nor even the majority of tumours that bear a general resemblance to it, that are cancerous, in fact it is often with the greatest difficulty that the cancerous or non-cancerous nature of a tumour can be determined, the presumption always is, in the case of a tumour getting well, that it was not cancer hence the great importance, in every suspicious case of having recourse to a skilful surgeon. With medical quacks every tumour is pronounced to be a cancer,

Canella.

and every cancer curable, the cures effected in the former case being taken credit for as of cancer, and in the latter case, much excruciating agony is entailed upon the sufferer without any benefit. Treatment.—The only hope of a cure in cancer is by extirpating the tumour in its earliest stage, and even this, after all, frequently affords but a temporary relief. According to Mr. Paget ("Lectures on Surgical Pathology"), the average duration of life after the appearance of the cancer is forty nine months. In forty-nine cases in which the cancer was once removed by operation, the average duration of life was somewhat more than forty nine months and hence he concludes that the average duration of life is not materially affected by the removal of the local disease, but adds, that it is probable that the progress of the more rapid cases is retarded by the operation. Sometimes in place of the knife escharotics as chloride of zinc, are had recourse to, but with no better success. Though a cure may not be expected much good may be effected by means of palliatives the patient is to be sustained by good nourishing diet but all stimulants are to be avoided, and everything that would tend to increase the activity of the disease. The state of the general health is to be carefully attended to, and body, mind and body kept as free from excitement as possible. In the local treatment of the disease sedatives, as hemlock, henbane and opium, are to be had recourse to in order to allay the pain. Among the lower animals this disease is not infrequent occurring the animal's most liable to its attack being the dog and cat.

CANCER SCROB (ANGIR OR THE SCROTUM, OR CHIMNEY SWEEP) (ANGIR is a disease of the scrotum, to which chimney sweeps are particularly liable owing to it is believed, to irritation caused by the action of the soot on that part. It commences by an indurated enlargement of the integuments, which may continue for a long time without much apparent progress, but eventually proceeds to ulceration, and if not checked, will involve the surrounding parts. Local applications may stay the progress of the disease and alleviate the suffering but the only hope of a cure lies in excision which should be done at an early stage of the disease, to afford any hope of permanent relief.

CANELIA *ki'nel'i* in Bot., the typical gen. of the nat. ord. *Cauleaceae*. The inner bark of *C. alba* forms the Quassia of the apothecaries. The tree is common in many parts of South America, and in the West India Islands, where it is often called Wild Cinnamon. The bark is removed with an iron instrument, and, after being deprived of the epidermis, it is dried in the shade. It is seen in flat or quilled pieces, of a light buff colour, and, from having been confounded with Winter's bark (see DANTIS), it is sometimes called spurious Winter's bark.

Capine Madness

Being an excellent aromatic, stimulant, and tonic, it is frequently used in medicine. In the West Indies and some parts of Europe it is used as a spice. Distilled with water, it yields a reddish yellow, fragrant, and very acid essential oil, which is often mixed with and sometimes sold for, oil of cloves. Dose, from 4 to 20 grains, in powder.

CAPITIS MARYS. (See HYDROPHORIA.)
CASTER TRITH. (See TRITH.)

CANKER or CANCRUM ORIS, is a deep, foul, festid ulcer, occurring on the inside of the lips and cheeks of children usually from 6 to 7 years of age. It is generally owing to want of proper food living in an unwholesome atmosphere or neglect of cleanliness. The ulcer gradually increases until it involves the whole of the interior of the cheek, lips and gums. There is a copious discharge of saliva, sometimes mixed with blood, and extremely fetid. The teeth become carious and drop out. If not checked the child becomes gradually weaker and at last sinks through fever or consumption. *Treat now!* —The treatment to be observed is first to administer some mild purgative, as rhubarb or magnesia and then to endeavor to strengthen the system by means of broths and other nourishing articles of food wine and quinine. The diseased part should be treated with stimulating lotion, a solution of nitrate of silver alum, or chloride of lime.

CANNALES, *can'na lez* [Lat.] in Bot. the Hemp, a genus of plants representing the order *Cannabaceæ*. *Cannabis*, the only species, yields the valuable fibre called hemp which has been known for more than 2500 years as a material for cordage, sacking, and cloth. In Britain the plant grows to the height of about six feet but in warmer climates it has occasionally been found sixteen or eighteen feet high. The principal supplies of the fibre are derived from Russia. The fruits, commonly termed *hemp seed* are elongated and dentiloid and are used for feeding birds. When submitted to pressure, they yield about 25 per cent. of a fixed oil, which is used for making varnishes. In the sap of the hemp plant there exists a resinous substance which has extraordinary narcotic properties. In northern climates the proportion of this resin in the several parts of the plant is so small as to have escaped general observation; but in the warmer regions of the East, the resinous substance is sufficiently abundant to exude naturally from the flowers, leaves, and young twigs. The Indian hemp, which is so highly prized for its narcotic virtues, is considered by some botanists to be a distinct variety, and is distinguished by them as *C. sativa*, var. *indica*. This herb, and the resin obtained, are largely employed in Asia, and in some parts of Africa and South America, for the purposes of indulgence. The dried plant is smoked, and sometimes chewed. Five or ten grains reduced to powder are smoked

Cantharides.

from a common pipe along with ordinary tobacco, or from a water pipe with a peculiar variety of tobacco, called *tombak*. The resin and resinous extract are generally swallowed in the form of pills or bohées. The hamp-plant and its preparations appear to have been used from very remote times. The effects of the natural resin, or *cannabis*, have been carefully studied in India by Dr O Shanghiness. He states that when taken in moderation it produces increase of appetite and great mental cheerfulness, while in excess it causes a peculiar kind of delirium and catalepsy. The effect produced by hemp in its different forms varies, like that of opium, both in kind and in degree, with the race of men who take it, and with the individuals to whom it is administered. Upon Orientals its general effect is not an agreeable and cheerful character, exciting them to laughter, dance, and song, and to commit various extravagances. It is, however, rendered somewhat disagreeable and quarrelsome exposing them to acts of violence. It is from the extravagant behaviour of individuals of this latter temperament that the use and meaning of our word "assassin" have probably arisen, the word having been derived from *hanchchin*, a hashisch-eater. As a medicine Indian hemp was tried by Dr O Shanghiness in rheumatic hydrocephalus, cholera, and tertian. In the last such wonderful cures were effected, that the hemp was pronounced in anti-convulsive, rectifying or the greatest value. Peter calls it an emollient, a mild purgative, hypnotic or soporific and stupefiant or narcotic. It is especially employed in neuralgia and painful rheumatic affection, tetanus, and hydrocephalus. The extract is prepared from the dried flowering tops of the female plant from which the resin has not been removed, by taking 1 pound in coarse powder, and macerating for 7 days, in 4 pints of rectified spirit and then pouring out the tincture. Distill off the spirit, and evaporate by a water bath to a proper consistence. Dose $\frac{1}{2}$ to 1 grain. The tincture is made by dissolving 1 ounce of the extract in 1 pint of rectified spirit. Dose, from 5 to 20 grains. (See Johnston's "Chemistry of Common Life.")

CANTHARADITE, *kan-tha'ra-dee*, the crystalline blistering principle contained in the *Cantharis senaria*, or Spanish blister-fly, first obtained by Boilinguet. To procure it the flies are digested in alcohol. The alcoholic solution is afterwards evaporated to dryness and washed with cold ether, which dissolves out the cantharadin. When pure, it is insoluble in water, but very soluble in boiling alcohol. Half containing one five-hundredth of cantharadin will produce a very powerful blistering effect when applied to the human skin.

CANTHARIDES, *kan-tha'ri-dez* [Gr. *kantharis*, a beetle], the name given to a family of

Canton's Phosphorus

coleopterous insects, very numerous, much variegated in colour, of moderate size, and generally living on vegetable substances. Many species are employed externally in medicine to produce blisters, as they possess strong vesicating powers. They are also used internally as a powerful stimulant. The *Centharis segetaria* is the common blister fly of the shops (See BLISTER FLY). It is given internally in the form of tincture (2½ ounce to 1 pint of proof spirit) in doses of 5 to 20 grains, with copious use of diuretics and diaphoretics. Thus given it is a stimulant diuretic and has also a peculiar effect upon the mucous membrane of the urinary organs. Hence it is employed in unnatural discharges from these organs, or suppression of such as are natural, incontinence of urine &c.

CANTON'S PHOSPHORUS — The protosulphate of calcium, when newly made is very phosphorescent. This property was discovered by Canton, who first prepared his substance by calcining oyster shells and mixing the whitest pieces with one third their weight of flowers of sulphur and calcining them in a crucible with a thin cover. When he let it for an hour, the white pieces were collected and preserved in well stoppered bottles.

CAOUTCHOUC. INDIA RUBBER OR GUM TRISTRICHOCHROA [its Indian name] — Caoutchouc is the solidified milky juice of certain tropical plants, the largest supply being obtained from the *Ficus elastica* a tree belonging to the old *Moraceæ* found in Sumatra, from other species of *Ficus* growing in Java and America. From the *Vinca elastica* a native of Guiana and Brazil, and from the *Urtica elatior* a climbing plant found in the islands of the Indian archipelago. Many other plants yield caoutchouc in small quantities such as the common fig (*Ficus carica*) the spruce, the dandelion and the coloquintidae. The milky juice of these plants consists of the caoutchouc mechanically suspended in the form of small globules in a thin aqueous fluid charged with soluble vegetable matter. In this respect it bears great analogy to cows' milk (see MILK), which is also a thin aqueous fluid holding insoluble globules in mechanical suspension. The analogy is further borne out by its behaviour when left to itself. Preserved in close vessels it separates into two portions, the more solid part, the caoutchouc, rising to the top, and forming a thick cream upon the surface. The caoutchouc of commerce occurs in the form of large shapeless masses collected at the foot of the tree which has been cut, or in rude cylinders formed in clay moulds. It is also imported in the shape of bottles, figures of animals, imitation of the human foot &c. When first introduced into this country, about a century ago, its only use was to efface marks made by lead pencils. In 1819 Mr

Caoutchouc.

Hancock commenced his experiments on its solubility in different fluids. His first experiments were unsuccessful, but at length he discovered that it could be dissolved in oil of turpentine. This was an important discovery, leading to the invention of waterproof cloth by Mr Charles Macintosh. The method by which this was effected consisted in connecting together two surfaces of cotton work cloth by means of the caoutchouc solution. This formed a material impervious to air and water, to which was given the name of Macintosh. Caoutchouc continued to receive numerous applications in manufactures, civil and mechanical engineering, domestic appliances and surgical instruments, until 1842, when the most remarkable discovery in relation to this material was made by Mr Goodyear (an American inventor)—namely, that by a certain mode of treatment it could be freed from its three great defects of hardening by cold becoming sticky and relaxing by heat and dissolving in oil and rags. Mr Hancock at once set to work to produce a similar material and after expending much time and labour in investigating the matter, he discovered a means of combining caoutchouc with sulphur, producing the substance known as vulcanized rubber. Since that period various methods have been devised for its manufacture, by知道 certain proportions of caoutchouc and sulphur in a masticator, by dissolving caoutchouc in sulphurized oil of turpentine which is afterwards allowed to evaporate by dipping the rubber in a solution of chloride of sulphur in bisulphide of carbon, and several other methods more or less important. The perfect elasticity of the new material, the ease with which it could be moulded into various shapes, the proportion of resisting heat, cold, and solvents soon rendered its use universal. Its applications to engineering purposes were most important. It soon superseded the use of metal springs for the buffers of locomotives. It replaced the leather for valves and washers, and waterproof overshoe began to be manufactured under Goodyear's patent by millions. Chemically considered, pure caoutchouc is a carbide of hydrogen, or hydro carbon C_6H_6 , possessing a specific gravity of 0.92 to 0.97 (Fahr.). It is prepared by dissolving the commercial material in chloroform precipitating with alcohol, and drying at a temperature of 70° to 80° Fahr. As it is found in commerce, it is a dark brown material, soft and elastic at ordinary temperatures, hardening temporarily at about 40° Fahr., and melting at 240° into a liquid having the consistency of tar, which does not soon resolidify. It is insoluble in water and alcohol, but dissolves more or less readily in chloroform, washed ether, bisulphide of carbon, coal tar, naphtha, benzole, and oil of turpentine. Nitric

Capillaries.

sulfuric acid, and the alkalies, attack it but slowly. According to Payen, caoutchouc consists of two portions, one of which is soluble in the liquids above mentioned, while the other only swells and softens under their influence. Caoutchouc dissolves in the fixed oils, but loses its elastic properties thereby. Caoutchouc, in its unvulcanised state, is most useful in the laboratory for connecting the tubes of apparatus. Its power for resisting reagents and its property of cohering to form a tight joint when newly cut, render it a desideratum in the modern laboratory. In its permanently melted condition it forms a valuable tube for pneumatic apparatus. Stoppers and stopcocks lubricated with it remain movable, yet perfectly air-tight. Vulcanised, it serves for gas bags and tubes, and for many other purposes. It must, however, be used with great care, as it is liable to introduce sulphur into solutions near which it passes.

CAPILLARIES, *kap' i lär' rēz* [Lat. *capillus*, a hair], in Anat., are the minute blood vessels of the body which form the connection between the extremities of the arteries and the veins. They vary in size from $\frac{1}{10}$ to $\frac{1}{5}$ part of an inch in diameter, being smallest in the brain and largest in the bones. It is in the capillaries that nearly all the changes in the blood take place. It is in them that its carbonization is effected and animal heat produced, and from them that the bile, sweat and urine are secreted. (See ANATOMY, CIRCULATION OF THE BLOOD.)

CARTILAGE, *kār' tīj* or *trūm* [Lat., a bridle], in Surg., is a single split cloth bandage, used to support the lower jaw, so called from its resemblance to a bridle.

CAPER, *kāp' pér' rēz*, in Bot., the Caper bush, the typical gen. of the subord. *Capparidæ* of the nat. ord. *Capparidaceæ*. The pickled flower buds of various species are used under the name of capers. Those eaten in Europe are the produce of *C. spinosa*, a trailing shrub which grows in rocky places in the south of Europe. It is the only species of the order found on the north of the Mediterranean. The capers used in Barbary are obtained from *C. Fortunata*, and those used in Egypt from *C. Egyptiaca*. They are pungent, stimulant and antiscorbutic.

CAPRIFOLIACEÆ, *kāp' ri-fōl' i-əsēz* [Lat. *veneris* goat, *folium*, leaf, in reference to the climbing habit of the plant] in Bot., the Honeysuckle fam., a nat. ord. of dicotyledonous plants in the sub class *Ceratophytes*. There are 12 genera and about 220 species, chiefly natives of the northern parts of Europe, Asia, and America. They often have showy flowers, which are commonly sweet-scented. Many are cultivated in our gardens and shrubberies, as Honeysuckles, which are species of the genera *Caprifolium* and *Lonicera*. Guelder-rose, species of

Capsule.

VIBURNUM, the Lustrum tree (*Viburnum Tinus*), the Snowberry (*Symplocos racemosa*), and the common Elder (*Sambucus nigra*). Some of the plants are emetics and mild purgatives; others are astringent; others sudorific and diuretic, and a few are acid.

CAPICINE, *kāp' i sēn* [from *capsicæ*, derived from Gr. *kephē*, I bite in allusion to its pungency], an alkaloid found in the capsules of the various species of capsicum used in the manufacture of cayenne pepper. It has a burning taste, is insoluble in water and ether, but soluble in alcohol, and may, when quite pure, be crystallized. It forms salts with nitric, sulphuric, and acetic acids. Its composition is unknown.

CAPSICUM [from Gr. *kephē*, I bite], in Bot., a gen. of plants belonging to the nat. ord. *Solanaceæ*, consisting of numerous species, all remarkable for the presence of an acrid resin called *Capsicæ* in their fruits which are hot pungent, and stimulating. Though now extensively cultivated in many parts of the Old World, the *vario* species are supposed to be natives of South America. The officinal capsicum is the *C. annuum* of Linnaeus, or the *C. Fructicosum* of Blume, has oblong-cylindrical fruits not an inch long in the most valuable varieties but two or three inches long in others. These fruits are commonly sold as *Chillies* and are used to make a hot pickle and the liquid known as *Chilli-vinegar*. Cayenne pepper consists of the powdered fruits of several species of *Capsicum* found in the West Indies and South America. In medicine, the fruit of the capsicum is used as an acrid stimulant and counter-irritant. In small doses it creates an agreeable sensation of warmth in the stomach and promotes the digestive process. Dose $\frac{1}{4}$ to 1 grain. Combined with salt, it is used as a stimulant in scarlatina, and also as a gargle in relaxed sore throat, or in the form of cayenne lozenges. Of the tincture, $\frac{1}{2}$ ounce to 1 pint of rectified spirit, the dose is from 10 to 30 minims.

CAPSULE, *kāp' sül* [Lat. *capsa*, a chest], is a membranous production, enclosing any part like a bag; as the capsular ligaments enclosing the synovia of the joints, the capsule of the crystalline lens of the eye.

CAPSULE, in Bot., a superior, one or more-seeded, dry, dehiscent fruit. The dehiscence or opening of the capsule may either take place by valves, as in the foxglove, primroses, and rhododendron, or by pores near the summit, as in the poppy and snapdragon. The distinctive name of *Paeonia* or *Paeoniæ* has been given to a beautiful kind of capsule which opens as if cut around near the summit, and presents the appearance of a cup with a lid. Examples of the latter may be seen in the *Primula* and *hempbush*. The capsule is one-sealed in the *Mugunette*, heart's-ease, and gentian; two

Capsules.

or most-celled in the serophulana, colchicum, iris, and datura.

CAPSULES, a name applied to small egg-shaped or spherical vessels, commonly made of gelatine, or of sugar and gelatine, and containing medicines of a nauseous nature, so that they may be swallowed the more readily.

CAPUT, *ka'-put* [Lat., the head], [in Anat., is applied to that portion of the human body which comprises the skull and face. The skull is distinguished into the following parts—the *cervix*, or crown, the *sternæum*, or fore part of the skull, the *occiput*, or hind part, the *tempora*, or temples. The parts of the *facies*, or face, are the forehead, eyes, nose, &c. The term *caput* is also applied to,—1, the upper extremity of a long bone, as the humerus, 2, the origin of a muscle, 3, a protuberance resembling a head, as the *caput Gallinae*, a small eminence in the urethra, 4, the beginning of a part, as *caput col.*, the head of the colon.

CAPUT MORTRUM [Lat., a dead head], a term employed by the old chemists to denote the fixed residue of chemical operations after all the volatile matters had been driven off.

CAPUT OSSEUM [Lat., stiff head], or wry-neck, is an involuntary and fixed inclination of the head towards one of the shoulders (See WRY-NECK.)

CAPUT PURGANS [Lat., *caput* and *purgare*, I purge], a name given to a medicine which causes a defluxion from the nose, purging, as it were, the head.

CARAMEL *kär'-rä-mel* [Fr.]—If sugar is re-sifted and the heat raised to 40° or 42°, the sugar loses two equivalents of water and becomes a brown, deliquescent, and nearly tasteless mass called Caramel. It is often used by cooks and confectioners as a brown colouring matter. The brown colour in brandy is due to a small portion of caramel dissolved in them.

CARAPA, *kar'-rä-pä* [from *carapa*, its African name], in Bot., a gen. of tropical plants belonging to the nat. ord. *Meliaceæ*. *C. Guianensis*, an African species, yields a fatty oil called Kundah or Tallico-oil, which is purgative and anthelmintic. It is expressed from the seeds. The bark of the tree has febrifugal properties. *C. Guanacaste*, a native of Guiana and the adjacent countries, furnishes similar products, indeed, it is somewhat doubtful whether these species are essentially distinct.

CARAWAY. (See CARAWA.)

CARBAMOTIC ACID, or PICRIC ACID, *kar'-äm-öt'-ik*, a complex acid, produced by the action of nitric acid on a number of organic substances, such as phenoic acid, salicin, phlorizin, alk. indigo, and a number of the resins. It may be prepared in a variety of ways. Carbamotic acid is soluble in 20 or 30 parts of cold water, forming a liquid of a bright yellow colour. It has an

Carbolic Acid.

intensely bitter taste, and has been used instead of hops for making bitter ale. It is sometimes employed as a test for potash, with which it forms a bright yellow crystalline precipitate, even in dilute solutions. Carbamate of potash is anhydrous, and requires 76 parts of water for its solution: the salts of soda, ammonia, and the earths are freely soluble.

CARBIDE, *kar'-bïd*, a term now employed instead of carburet to denote the union of carbon with a base. The more important carbides will be found under the heads of their respective bases.

CARBON. (See CARBON.)

CARBONIC ACID, *kar'-böl'-ik* (Phenoic Acid, Hydrate of Phenyl, Phenole, Hydrated Oxide of Phenyl, Phenyle Alcohol), ($C_6H_5OHCO_2$).—

Carbolic acid is a very abundant product of the distillation of coal. Laurent obtained carbolic acid from oil of coal-tar by collecting separately those portions which boil between 30° and 40° Fahr. By mixing with this oil a hot saturated solution of hydrate of potash, a white crystalline substance separates, the supernatant liquid is decanted, and the crystals are dissolved in a small quantity of water. The solution separates into two portions, the denser of which contains carbamate of potash. The potash is abstracted by the addition of hydrochloric acid, and the liquid carbolic acid rises to the surface.

The carbolic acid solution is digested with chloride of calcium to remove water, and afterwards exposed to a low temperature. It then crystallizes in long colourless needles, which must be kept from contact with the atmosphere. Carbolic acid melts at 55°, and boils between 36° and 37°. The slightest trace of moisture is sufficient to cause the liquefaction of the crystals. Carbolic acid is but sparingly soluble in water; it is however, readily dissolved by alcohol, ether, and acetic acid. It has a burning taste, and an odour of smoke resembling creosote. Its solution does not reddish litmus, and leaves a permanent greasy mark on paper if let fall upon it. A splinter of deal tipped in carbolic acid and then into nitro acid becomes dyed blue. Carbolic acid has lately received an important application as a disinfectant and deodoriser (See Disinfection.) In medicine carbolic acid possesses all the properties of creosote in an oxidized degree. It is a valuable antiseptic, possessing the power of preserving organic substances by preserving from putrefaction and arresting fermentation in a remarkable degree. It is also used as a disinfecting wash for ill-conditioned ulcers and gangrenous sores. Internally it is used in chronic diarrhoea and obstinate vomiting, and also cases of gastric irritability. Dose, 2 to 3 grains. The glycerine of carbolic acid, composed of 2 ounces of the acid to 4 fluid ounces of glycerine rubbed together until

Carbon

the acid is dissolved, is recommended in skin diseases, particularly such as are of a fungous origin, or are owing to insects, as the itch.

CARBON. *carbō* [Lat. *carbo*, a coal] — symbol C, equivalent to spec. grav. 1.125, as graphite 1.9 to 2.3, in elementary non metal solid body, very widely diffused throughout nature. Its purest and rarest form is that of the diamond, but in the forms of graphite and mucic acid coal it occurs very abundantly in nearly every part of the world. It also occurs in combination with oxygen as carburetted in small quantities in the air, and in the waters of most springs. In combination in carbonic acid, with lime and magnesia it occurs, in enormous quantities, in lime stone, marble, chalk, dolomitic &c., whilst combined with hydrogen, it enters largely into coal, peat and lignite. From its invariable presence in all organic matter, it has been called the organic element and Hoffman poetically calls "organic chemistry the history of the world." — *Carbon*. From entering thus directly into the vegetable and animal creation, carbon may be considered as the most important element and the giving out of carbonic acid by animals to serve for the food of vegetables is one of the many silent chemical operations constantly going on around us. The wonderful provision of Nature by which the carbonic acid cast out by animals is a poisonous product is converted into tool for the support of plants by the action of the sun's rays, has been the admiration of philosophers and chemists from the day of Lavoisier to the present time. Charcoal or amorphous carbon exists in ordinary wood charcoal and lampblack, principally combined with incompletely burned compounds of carbon and hydrogen. Coal and animal charcoal are other forms of carbon. Charcoal is made by enclosing wood billets in an iron retort, to which is adapted a tube for conveying the products of combustion to appropriate receivers, and exposing it to a red heat for four or five hours. Where wood is very abundant, like heath covered with powdered charcoal, leaves, turf, and earth, are fired and allowed to burn slowly for a month or more. Charcoal prepared in this way is superior to that burnt in Retorts. *Animal charcoal* or bone black, is prepared in cylinders in a similar manner to that employed for wood charcoal. Carbon in its amorphous condition is a black, dense, perfectly opaque, insoluble, infusible, inodorous, tasteless body, conducting heat badly and electricity freely. At ordinary temperatures it shows no chemical affinities. This property has been taken advantage of by the ancients who used it for ink. The same property has rendered it a common practice to char the inside of tubs and casks intended to hold

Carbon, Bisulphide of.

liquids, and posts and piles partially charred are found to last longer under water than when unburned in their natural state. Burnt charcoal has powerful antiseptic properties and it is coming into use as a deodorizer for purifying the air of sewers. The next smelting of the use of carbon for filters, both of air and water is, probably of its efficacy as a disinfectant and deodorizer. Charcoal also has the peculiar property of absorbing colouring matter from organic solutions, hence it is used as a decolorizer. At high temperature carbon will decompose energetically with oxygen and will then react with great numbers of its combinations, being at first reduced to volatile oxides. Whatever be its source or form, carbon is chemically the same and when burnt in oxygen, forms carbonic acid. Carbon unites with several of the elements to form very important compounds. Its most important compounds are those of which the heads are *Carbonic Acid*, *Carbonic Oxide* (CO) & *Lanthipine* or *Hydrogen*. In Medicine wood charcoal is used as an antiseptic and disinfectant. It has lately come much into use in induction particularly in the form of lozenges, correcting flatulence, setting broken teeth stools &c. It is also used as tooth powder, and to relieve tooth decay of the teeth. Dose, 1 in each dose. Charcoal poultice a useful application for sore and fatigued ulcers is made by macerating 2 ounces of bread (crumb for 10 minutes in 20 min. on a flat bottom) in boiling water mixing and adding gradually 1/2 cupful of linseed meal so as to form a paste, then adding 1/2 ounce of charcoal until no further powder on the top. Animal charcoal possesses the same medicinal properties as that of wood charcoal but some of them are greater in extent. It is particularly useful as a deodorizer and as an antidote in poison by certain vegetal substances, the alkaloids &c. if given immediately. As an antidote it can be much used by its being mixed with water and the poultice in swallow it dose, 20 to 30 grains. *Carbon Bisulphide* (CS₂) — equivalent weight 84, spec. grav. 1.7 boiling point 118° Fahr. Only one compound of sulphur and carbon is known. It is prepared by heating fragments of charcoal to reduce them to 100°, into which dips a tube reaching to the bottom of the charcoal. From time to time sulphur is dropped through the tube, which is closed again immediately. The sulphur and carbon gradually combine, and the bisulphide distills over into the receiver, which is kept cool with ice. It is at first yellow, from excess of sulphur, but by being distilled several times it is obtained in a state of purity. It is a colourless liquid with an acid, pungent taste and a strong odour. It is insoluble in water, but dissolves in ether and alcohol. It is very

Carbonic Acid

volatile, and has never been frozen. It burns with a blue flame, giving off sulphur and carbonic acid gases. It dissolves sulphur and phosphorus readily, and these elements may be obtained in crystals by slow evaporation of their solutions. It is said to be stimulant, diaphoretic and antineuragogic in doses of 2 to 6 drops in milk, wine or on sugar. The vapour is anaesthetic.

(**ARBORIC ACID**, *kar bor-ik* (CO_2), specific grav. 1.07—Carbonic acid is the product of the combustion of all substances containing carbon. It occurs in combination with metallic oxides in the mineral kingdom, & is dissolved in mineral springs. It issues from the earth in volcanic districts, and forms the deadly choke damp of the coal mines. It is also a product of respiration in fermentation, and putrefaction which is nothing more than slow combustion. It is easily prepared by acting on a carbonate, such as chalk or marble, with nitric, sulphuric, or hydrochloric acid in a gas generating apparatus. The carbonate of lime is converted into chlorides of calcium and the carbonic acid escape as a gas.

Carbonic acid is known in the solid liquid and gaseous states. In the purest dry atmosphere at -2° Fahr., it is required the pressure required decreases as the temperature gets lower. Liquid carbonic acid is colourless, insoluble in water and fatty oils, but miscible in all proportions with ether, alcohol, benzolipide of carbon, naphtha and turpentine. At 0° Fahr. it is a clear and viscous transparent mass used in conjunction with ether and sulphide of carbon, in producing intestine gas. Gaseous carbonic acid is colourless, having a slightly acid smell and taste. At ordinary temperatures it dissolves in water in the proportion of half its bulk. By pressure, water may be made to take up great quantities of the gas, the same volume being always absorbed, no matter how great the pressure may be. Upon the removal of the pressure the gas escape in bubbles. When inhaled, carbonic acid produces death even when much diluted. A lit candle is generally used to test air to see if it contains carbonic acid, but it is found that air that will support combustion will contain sufficient of the gas to cause insensibility and dangerous illness. The ill effects of crowded places are owing to the systemic depression produced by small quantities of carbonic acid. Though it feels acid and easily separable from its combinations, carbonic acid unites with the metallic oxides, forming very numerous and important classes of the carbonates, described, of which it may be found under the headings of their bases. The carbonates of the alkalies are soluble in water, the carbonates of the other metallic bases being for the most part in-

Carbuncle.

soluble, except the water is highly charged with carbonic acid. Hard water contains carbonate of lime or magnesia held in solution by the carbonic acid contained in the water, hence when the gas is dissipated by boiling, the carbuncle of lime is precipitated, increasing the vessel in which it has been boiled. Carbonic acid taken internally in the form of an effervescing draught has a very soothing and sedative effect, serving to allay gastric irritability. Externally it is useful as a local anesthetic in painful infections, as cancer, &c. In passing through this gas, the treatment consists in free exposure to the air, artificial respiration, cold infusion, and the use of stimulants, external and internal.

(**ARBORIC OXIDE** ("O) — equivalent 14, sp. gr. 0.97—Carbonic oxide is produced when carbonic acid is passed over red hot charcoal and this gas is formed during the combustion of almost every organic substance. The first result of combustion is of course carbonic acid, which, passing over the red hot coals of brick, at the same time reacts with an equivalent of its oxygen. The gas however, is inflamed if not as it is formed, and recombines with carbonic acid. It is generally prepared by the decomposition of oxalic acid by sulphuric acid. On the acid consists of C_2H_2 united to an equivalent of water, without which it does not appear to be able to exist. The sulphuric acid abstracts thus equivalent of water, leaving the C_2H_2 , which it enters into CO carbonic oxide, and O_2 carbonic acid. The latter is absorbed in the mixed gases through bulk of lime. Carbonic oxide gas thus prepared is colourless and odorous, burning with a blue flame, and giving rise to carbonic acid. It supports neither combustion nor respiration in one per cent mixed with air being sufficient to create dangerous drowsiness. It is now satisfactorily proved that the common generally resulting in death produced by the combustion of charcoal in close rooms, is due to the formation of carbonic oxide by the carbonic acid formed during combustion being exposed to the action of so much incandescent material. It is a neutral body, has no action on luminous paper, does not combine with acids or bases, and has never been liquefied. It is slightly soluble in water.

(**ARBUNCLE** *ar bun'kl* [Lat. *carbunculus*, a little coal] in man, is a broad, flat flame, burning tumor, usually of considerable size. It occurs most commonly in middle life, and in those who indulge freely in the pleasures of the table. It begins with a hard, painful swelling of vivid colour, which rapidly enlarges. The pain is severe, and is much increased by pressure; the patient is much depressed, and a general derangement of the system takes place. Vesicles form on the part, which soon open, and dis-

Carburetted Hydrogen

charge a thin viscid fluid, with occasionally sloughed portions of disintegrated tissue. Sometimes these apertures run into each other, and form large openings. The predisposing cause of this disease is a derangement of some of the secretions of the human body. *Treatment*—The treatment consists in restoring the body to its normal condition by promoting the action of the different secretory organs. Hence purgatives, diaphoristics, and diuretics, are indicated. The strength of the system should also be kept up by means of tonics, as quinine, with nourishing diet and wine or brandy if necessary. At the commencement, the local treatment should be directed to repel the tumour by means of cold applications, compresses, &c. If the inflammation still proceed, suppuration should be hastened by means of poultices and fomentation. Opiates may also be given to relieve the pain. Afterwards, a free application of the knife is recommended. Should in place of the knife, recommend the caustic plan—a free application of potash lye to the part, but in most cases the knife will be found preferable. An incision usually in the cruciate form, throughout the whole extent of the diseased mass, evacuates the purulent matter and affords an exit for the sloughs when loose. Afterwards bread or moist meal poultices should be applied till the morbid matter is diminished and then some healing ointment should be used.

CARBURETTED HYDROGEN (see HYDROGEN)

CARBURES *kar' bürz*—Cubebes are now called carbides, the word being more analogous to chlorine than &c.

CARDAMOM *kar' däm' m* [from Gr *kard* a heart or courage on account of its strengthening properties] in Bot. a gen. of plants belonging to the nat. ord. *Cruciferae*. *C. officinalis*, the Cuckoo flower, or Lady's smock, is an indigenous perennial plant with in meadows and moist pastures, blossoming in the month of April and May, when its flowers, which are flesh coloured, white, or light purple, present a very pleasing appearance. Formerly the flowers were used medicinally, as a remedy in epilepsy. The leaves are antiscorbutic, and are sometimes eaten as watercress.

CARDAMOMUS (See ELENTARIUM and AMOMUM.)

CARDIA, *kar' diä* [Gr. the heart] is the name given to the superior opening of the stomach, on account of its being situated near the heart.

CARDIAC, of or belonging to the heart. Thus Cardiac Medicines are cordials, or stomachic and stimulant medicines, supposed to stimulate or strengthen the heart.

CARDIACUL, *kar' di-ü'l* *ü'l* [Gr. *kardia* and *alge*, pain], denotes pain or an uneasy sensation in the stomach, accompanied with anxiety, a heat more or less virulent, sometimes attended with oppression or fainting,

Carica.

and frequently with an inclination to vomit, or a plentiful discharge of clear lymph like saliva. (See DYSPEPSIA, HEMATOPHAGA.)

CARDIOSPERMUM, *kar' dë-spér'm* [Gr. *kardia*, heart; *sperma*, seed, in reference to the shape of the seeds], in Bot., a gen. of plants belonging to the nat. ord. *Sapindaceæ*. The root of the species *C. halimocarpon* is described as diuretic, diaphoretic, and aperient. The leaves are boiled and eaten as a table vegetable in the Moluccas.

CARDIUM, *kar' di'üm* [Gr. *kardia*, the heart, terminal *üm*] in Path., denotes inflammation of the heart. It is characterized by pain in the region of the heart, great anxiety, fever, difficulty of breathing, palpitation, cough, irregular pulse and fainting. It is applied properly to inflammation of the muscular tissue of the heart itself, but this is a form of disease that rarely occurs alone, being usually accompanied by *pericarditis*, or inflammation of the pericardium or by *endocarditis*, or inflammation of the inner membrane of the heart. The symptoms and treatment in each case are similar. (See Heart Disease, &c.)

(CARDOON, *kar' dün* [Sp. *car* luna] a garden vegetable, introduced into this country about the middle of the 17th century from the south of Europe. It bears a great resemblance to the artichoke and belongs to the same botanical genus. (See CHAUM.) The tender stalks of the plant leaves, rendered white and crisp by the cutting up are used for stewing, and for soups and salads during the winter. With the flowers of the cardoon called *cardo d' oca* the Portuguese formerly coagulated milk for cheese making.

CARDUTS, *kar' diüs* [Lat., a thistle], the Thistle, a gen. of plants belonging to the nat. ord. *Compositæ*, consisting of numerous species some of which are noble looking flowers. *C. benedictus* and a few others have been used in medicine in tonics and itch tinctures.

CAREL, *kar' rel* [from Lat. *carea*, I want the upper spines being without scales] a gen. of plants belonging to the nat. ord. *Cyperaceæ* or Sedge family, consisting of upwards of 400 species, more than 100 of which are British. The creeping stem of *C. arenastrum* and other species help to bind the sands of sea-shores, and the plants are sometimes carefully cultivated for this purpose on the dykes of Holland. These stems, improperly called roots, have been used medicinally as substitutes for sarsaparilla, under the name of German sarsaparilla.

CARICA, *kar' re'kä* (from being erroneously supposed to be a native of Caria), a gen. of plants belong to the nat. ord. *Papaveraceæ*. The species are natives of South America and the tropical regions of the old world. The acrid milky juice of *C. digitata* is said to be a deadly poison. The juice of the unripe fruit and the powdered seeds of *C. papaya*

Caries

are powerful anthelmintics, but the fruit, when cooked is edible. This plant is said to have the property of rendering meat tender. It is stated that newly killed meat hung among the leaves soon becomes soft and delicate, and that the flesh of old hogs and old poultry fed on its fruit or leaves is remarkably tender. The leaves are used in some districts as a substitute for soap. The juice is said to be a highly animalized product, resembling animal albumen in its character and reactions.

CARIES [*Lat. rotteness*], is a disease of the bone, analogous to ulceration of the soft parts. It differs from necrosis, in that, in the latter, the bone is destitute of vitality which is not the case when it is simply carious. Necrosis corresponds to mortification of the soft parts. Caries most frequently attacks the bones of the spine, but it may affect any of the bones especially such as are of a spongy texture as the carpel or tarsal bones, in the heads of the long bones where they form articulations. The young or those of a scrofulous habit of body are most subject to this disease. It sometimes appears spontaneously, at other times as the result of an injury as a blow or fall. It begins with inflammation, usually attended with a dull heavy pain and weakness in the part affected. In course of time an abscess forms which, if not arrested, it will burst and discharge a thin fluid containing particles of the bone. In caries of the vertebrae, curvature of the spine takes place more or less according to the number of vertebrae affected and paralysis generally sets in. At the articulation of the bones the part enlarges, the cartilages become affected and amputation or extraction of the joint is often necessary, in order to save the patient's life. **Treatment**—Much may be done in arresting the progress of this disease at least in its earlier stages. For this purpose, the patient should be strengthened by good air and nourishing diet at the same time that rest is enjoined. The state of the stomach and bowels should also be attended to. In the local treatment of the disease, blisters, leeches and vapors are to be employed. The abscesses are best left to nature unless they are productive of much uneasiness. When they have burst, the extirpation of the diseased part should be expedited as much as possible, or when practicable the whole of the diseased portion should be removed by a saw or gouge so that the healthy portions may granulate and heal.

CARISSA [*Lat. carissa*, a genus of plants belonging to the nat. ord. *Apoynaceae*. The species *C. Coriaria* bears an edible fruit which is eaten in the East Indies, either alone or with meat, as a substitute for red currant jelly. The fruits of *C. edulis* and *tomentosissima* are also eaten in Abyssinia.

Carpel

CARLINA, *kar'li na* [after the Emperor Charlemagne, whose army was cured of the plague by it] a gen. of plants belonging to the nat. ord. *Compositae* and closely allied to the Thistles. *C. acanthifolia* the Carlina thistle, grows on hills and mountains especially in calcareous soils, in the middle latitudes of Europe. It was formerly in high repute for the medicinal virtues of its root which, in large doses, acts as a drastic purgative, but its use is now confined to veterinary practice.

CARMINATIVES [*Lat. min' d tis*] [*Lat. carmen* a charm, Fr. *carminal f.*] is a term applied to certain substances which have the power of dispelling flatulence or relieving pain in the stomach and bowels. They belong chiefly to the vegetable kingdom, as cardamoms, peppermint, ginger, anise, and caraway seeds and other aromatic stimulants.

CARO [*Lat. caro* [a Latin word signifying flesh]] it is frequently used in medicine as well as many of its compounds, as *carneal columnæ* the fleshy columns or muscular fasciculi within the cavities of the heart; *carneous* fleshy; *appetit*; some muscles of the heart *carneol* (*dim.*) a small fleshy substance *carneiformis* having the appearance of flesh; *carneorous* flesh devouring, applied to animals that live on flesh, *car nosus*, fleshy.

CAROB BEAN (See CERATONIA.)

CAROTID ARTERY [*caro* of *id* [*Lat. arteria carotis*]] is the name given to a considerable artery on each side of the neck. It is so called from the Greek verb *κρεος*, I can no longer sleep because if tired or compressed the person becomes comatose and has the appearance of being asleep. The right carotid arises from the arteria innominata, the left from the aorta. The left is thus rather longer than the right and is in general, somewhat smaller. They ascend backwards and outwards into the neck and when opposite the os hyoides each of them divides into the external and internal carotid arteries the former proceeding to the face and parts without the cranium the latter to those within. The external carotid divides into ten branches, viz. the anterior thyroid, lingual, lateral occipital, muscular, pharyngea ascendens posterior, auris transverse, facial, temporal and internal maxillary. The internal carotid enters the cranium by a somewhat tortuous course and afterwards separates into four branches—the ophthalmic artery and the anterior, posterior and contral arteries of the brain.

CARPEL [*Lat. petio* [*Lat. carpos*, fruit]] a modified leaf forming the whole or part of the pistil. When several carpels are present, they may be either distinct from each other, as in the cypripediums or combined so as to form one body as in the poppy. The carpels, taken collectively constitute the gynaecium, or female system of flowering plants (See PISTIL.)

Caryphologia

CARYPHOLOGIA, *kar'fō lo'jē-ə* [Gr. *karyphos*, the nap of clothes, and *loge*, I pluck] is the picking of the "bedclothes sometimes observed in persons in the delirium of a fever and regarded as a very dangerous symptom.

CARYSIS, *kar'ī-sis* [Gr. *karypos*], is a term in Anat., applied to the wrist, or that part of the upper extremity between the forearm and the hand. The carpal bones, or bones of the wrist, are eight in number, and are arranged in two rows, a superior and an inferior, each containing four bones. In the superior row, counting from without inwards, are the scaphoid or navicular, the lunar, trapezium or pyramidal and trapezoid bones, and in the inferior, the triquetrum and trapezoid bones, the os inunctum, and the ulnar bone. These bones are connected with each other with the metacarpal bones and with the extremities of the radius and ulna, by numerous ligaments (See ANATOMY).

CARRAGHÉE, or IRISH MOSS (See CHONDRUS.)

CARRON OIL or (ARROW WATER) is a mixture of linseed oil and lime water, in equal proportions, frequently applied to burns (See BURNS). It takes its name from the Carron Iron Works, in Scotland, where it was first used.

CARROT (See DAUCUS.)

CARTHAMUS [*kar'θām'us*] *suffr* [from the Arab. *qashtūn* to paint] is a genus of plants belonging to the nat. ord. Composite. The most important species is *C. tinctorius* the safflower or bastard saffron. The flower of this yields a beautiful pink dye, and we sometimes used to substitute bay sallow for it. The substance called fake saffron consists of sifted flowers and mucilage. The fruit commonly called seeds yield by expression, a useful oil, which is known in India as koosum oil.

CARTILAGE, *kar'til'j*, [*kar'* + *tal'j*] in Anat., is a white, firm, elastic substance intermediate between bone and ligament, and commonly known by the name of gristle. Cartilages are divided by anatomists into—*1*, articular or obdurate covering the surface of the bones which form movable joints, *2*, inter articular which are situated between the end of bones, forming articulations, and *3*, connecting cartilages which unites one bone with another. In some organs, cartilage occurs unconnected with bone, as in the larynx and trachea. In early life cartilage in various parts occupies the place of bone, and becomes afterwards ossified. The physical properties of cartilage—its firmness, elasticity, and power of resistance—renders it especially fitted for the purposes which it is intended to serve, facilitating the motions of bones, or connecting them together.

CARYUM, *kar'ūm* [from *Carna*, in Asia, it being originally found there], a genus of plants belonging to the nat. ord. Umbellif-

Caryota

fera. The species *C. cassia* is the common caraway, a native of most parts of Europe. It is largely cultivated in Flanders for its fruits, commonly called seeds, which have a pleasant colour and a warm aromatic taste, owing to the presence of about five per cent. of volatile oil. They are much used in confectionery and for flavouring liqueurs. They are obtained by distilling the fruits with water, and are used as a corrective adjunct in medicine.

CARYOPHYLLUS, *kar'ō-fil'ūs* [Lat. *caryophyllea*, dim. of *caryo* fl. wh.], in Anat., is used to denote a small piece of flesh or a little fleshy excretion, hence the *caryophyllea lacrymata*, a small fleshy, gl. nubiform body, situated on the triangular comb eye.

CARYTIS, *kar'ī-tēs* [Gr. *kar'ītēs* the hold], denotes very profound sleep, lethargy, or coma (w. h. m.).

CARYUS, *kar'ūs* [Gr. *kar'ūs* a nut] a genus of plants belonging to the nat. ord. Juglandaceae. The species are (in the natives of N. Amer.) *C. alba* the common hickory, *C. virginiana* timber and also for its edible seeds which are commonly known as hickory nuts. *C. oliverianus* yields an oval-shaped or elliptical nut which resembles the walnut in flavor; this is known as the peach nut (*Juglans*) and yields an edible nut called the hog nut.

CARYOPHYLLUS, *kar'ō-fil'ūs* [Lat. *caryophyllea*, dim. of *caryo* fl. wh.], a genus of plants belonging to the nat. ord. Myrsinaceae. The most important species is *C. virgatum*. The clove tree in Java (the Moluccas), but now grows also in the S. E. Indian and in the West Indies. The clover is common to the unexpanded flower buds. They are well known to us and are much used in medicine on account of their stimulant and nutritive properties. The oil of cloves, *oleum caryophylli* has a sharp, strong, and a warm aromatic and even acid taste. It is one of the volatile oils that are in water, having a specific gravity of 1.02 to 1.07. The essence of cloves is prepared by taking $\frac{1}{4}$ ounce of bruised cloves and to fluid ounces of boiling distilled water and infusing in a covered vessel for half an hour and then straining. Dose of powder 5 to 10 grains, of oil 2 to 5 minims, of wine 1 to 2 fluid ounces. The dried unripe fruits are called *Mother cloves*, and are used in China and other countries instead of the ordinary clove to which they are very inferior.

CARYOPSIS, *kar'ō-pi'ps*, a superior one-called one—seeded, in its bent fruit, with a thin, dry, membranous pericarp, completely and in spirally united with the seed. The grains or fruits of the grasses as wheat, barley, rye, and maize are examples.

CARYOTA, *kar'ō-tā* [Gr. *caryo*] a genus of palms, native of the East Indies. From the species *C. urens*, sugar, or *jaggery*, is procured, and its juice, when fermented, forms a kind of toddy, or palm-wine. From the trunks of

Cascaria

the old trees a kind of sago is obtained, and this is much used as food in Assam.

CASCARILLA (*See Cactus*)

CASHEW, *ka-se-w* [Lat. *carya*, choose], is the nitrogenous principle of milk, which forms a large portion of the curd. *Casheine* in the soluble form, appears to be preserved in solution by a small quantity of oil it contains in the milk. In the coagulated form it is readily obtained by adding dilute sulphuric acid to the milk which precipitates in the form of curd. The curd is well washed and dissolved in carbonate of soda, and allowed to stand for twenty-four hours, to let the oil rise to the surface. This is skimmed off and the caseine precipitated by an acid. The process is repeated a second time, and the coagulum digested with alcohol and ether, and dried. With all these precipitations the caseine still contains some salin matter, which cannot be removed. It is also obtained by coagulating the milk with hydrochloric acid. Coagulated caseine is readily dissolved by alkalis and alkaline carbonates. Caseine also unites with earthy carbonates, and forms insoluble compounds. A very tenacious knot is made by mixing poor cheese with lime. The most remarkable form of coagulation is that produced by the return of the secretion from the mucous membrane of the stomach. This substance is called rennet, and consists of the inner membrane of the fourth stomach of the calf salted and dried. When a solution of rennet is mixed with milk, a delicate coagulum is formed leaving the whey behind as a thin clear, straw-colored liquid. The quantity of caseine in milk varies according to the period of lactation at which the milk is examined, and varies also in different animals.

CASSIA OINT. (*See Liniment*)

CASVATA (*See Maximot*)

CASVIA, *kash-ee-a* [from Arab. *khata*, to tear off, the bark being stripped off the tree], a gen. of plants belonging to the nat. or *Leguminosae*, sub ord. *Cesalpini*. The leaflets of several species furnish the important drug *senna*. Some uncertainty prevails as to the species yielding some of the commercial varieties. This kind commonly known as *Alexandrian senna* is generally supposed to be derived from *C. officinalis*, var. *lanceolata*, and *C. oblonga*. This is the kind most esteemed in Britain but it is frequently adulterated with the leaves of other plants. The common East Indian, Mexican, or Bombay senna is supposed by Boyle to be the produce of *C. officinalis*, var. *acutifolia*. Timnevelly senna, a very fine kind, is furnished by *C. officinalis*, var. *elongata*. The above three varieties are those generally used in this country. Senna has a faint sickly odour, and a mucilaginous, bitter, and nauseous taste. It is a common, safe, and efficient purgative, and may be given to children, females, and elderly per-

Castanea

sons with safety. It acts principally on the small intestines, producing copious loose evacuations. Its efficacy is increased by drinking plentifully of diluents, and its nauseous taste is dispelled by giving it in strong coffee or tea, or by the addition of sugar and milk. To prevent griping which it has sometimes a tendency to produce, it is frequently conjoined with rhubarb as a binder, or aperitif. It is usually given in the form of infusion often in combination with a saline purgative, such as sulphate of magnesia, or Epsom salts. The infusion is formed by taking 1 ounce of senna, 30 grains of dried ginger, and 10 fluid ounces of boiling distilled water, infused for one hour in a covered vessel, and strain. Dose, 1 to 2 fluid ounces. The compound tincture of senna, or black draught, is formed by dissolving 4 ounces of sulphate of magnesia and $\frac{1}{2}$ ounce of extract of liquorice in 14 fluid ounces of infusion of senna, with a gentian root; then add $\frac{1}{2}$ fluid ounces of tincture of senna, 10 fluid drachms of compound tincture of cardamoms, and a sufficiency of infusion of senna to make one pint. Dose, 1 to 2 fluid ounces. For infants, take $\frac{1}{2}$ ounce of senna, mixed in small quantities of rums, freed from seeds, 3 ounces each of bruised caraway and red under fruit, and print of roots, burnt mace root, in forty eight hours in a closed vessel and then strain. Dose, 1 to 4 fluid drachms. The syrup and the confection are very useful and palatable preparations of this drug, but they contain a number of ingredients and the making of them is tedious and complicated. Dose of the former, 1 to 4 fluid drachms of the latter, 1 to 120 grains. Other commercial varieties are Tripoli senna from *C. alata* and Alexandria senna, from *C. oblonga*, and Andaman senna, from *C. Malabarica*. Another drug called *carru pulp*, or *purpurina*, is obtained from the pods of *C. acutifolia*, namely, *C. fistula*. The pulp is contained in the pods. It is of a reddish black colour, of a sweetish taste, and possesses a laxative and purgative properties. It is one of the ingredients in the confection of senna. The pods of *C. Benthiana* are used in veterinary medicine under the name of horse senna. The seeds of *C. Alata*, under the names of Chinch and Sennit, are used in Egypt as remedies in opthalmia.

CASSIA BARK, and CLEAVIA BARK (*See Cinnamomum*)

CASTANIL, *ka-sta-ne-a*, n. Bot., a gen. of plants belonging to the nat. ord. *Cistaceae*. The species are familiarly known as chestnut trees. *C. vulgaris* or *vires* is the Spanish chestnut which is much cultivated for timber, and for its edible nuts, which form a principal part of the food of the poor in the south of Europe. *C. Americana*, a native of the Northern States of America, produces a much smaller, but very sweet nut. The

?Castor.

chestnuts eaten in Britain are chiefly imported from Spain

Castor, Castor, is the dried preputial follicles and their secretion obtained from the Beaver (*Castor Fiber*), and separated from the somewhat shorter and smaller oil-sacs which are frequently attached to them. The follicles are usually in pairs about 2 inches long, fig shaped, firm and heavy, brownish or greyish black and containing a dry resinous, reddish-brown or brown, highly odorous secretion, in great part soluble in rectified spirit, and in ether. It is antispasmodic and stimulant, and has been recommended in various nervous diseases, as hysteria, epilepsy, catalepsy, &c., particularly when attended with uterine disorder. Dose, 5 to 10 grains. The tincture of castor (one ounce in coarse powder to one pint of rectified spirit) is given in doses of $\frac{1}{2}$ to 1 fluid drachm.

CASTOR OIL (See RICINUS).

(HALPERIN). *kata-a-lep'se* [*G.* *katálepsis*, from *kata*, down or into and *leptos*, I seize], in Path., is disease characterized by a sudden deprivation of sensation and voluntary motion. The attack usually comes on without any warning and during the paroxysm the patient remains in precisely the same position as he was in at the moment of attack. The circulation and respiration are in most cases but little affected, but occasionally they are greatly depressed, and are sometimes even imperceptible. The attack may last only for a few minutes or it may continue for hours and even, it is said, for days and consciousness generally returns with the same suddenness as it left, the patient having no recollection of anything that passed during the attack. This disease bears a great resemblance to the somnambulistic state, and, indeed, is so often feigned, that many have doubted whether it really had any existence. There can be little doubt, however, that it is sometimes, though not often, a real disease. The hysterical and melancholic are most predisposed to it, and the paroxysms are frequently induced by some strong mental emotion, or by some disorder of the digestive or secretory organs. The treatment will necessarily vary in each particular case, according to the general condition of the patient and the probable exciting cause. Generally, however, the system should be strengthened by nourishing diet, gentle exercise, sea-bathing, and tonics. During the attack, the body should be kept warm and excited by gentle friction, mustard poultices should be applied to the soles of the feet, the palms of the hands, and the pit of the stomach, and strong ammonia applied to the nostrils.

Cataplasma, *kat'-plaz'ma* [Gr. *kata*, down, and *plassein*, to shape], is a poultice or external application of a pulpy substance, employed for removing inflammation, promoting suppuration, or relieving

Catarrh

pain. They are of various kinds, and may be composed of a great variety of substances according to the purpose they are intended to serve being emollient, stimulating, astringent, discatuent, antiseptic, antidyne, &c. The common linsseed poultice is in all ordinary cases the best that can be used. It is formed by gradually stirring the meal into a sufficient quantity of boiling water until the mass has acquired a proper consistence, and then adding a small quantity of olive oil. The officinal quantities are, meal 4 ounces, boiling water 10 fluid ounces, olive oil $\frac{1}{2}$ fluid ounce. It is then enclosed in a piece of muslin or thin calico, and applied to the part as hot as it can be borne. The bread poultice is also very useful, though inferior to the former. It may be made either of milk or water the bread being crumbled in, and the mass allowed gently to simmer over the fire till properly softened, and then beat and stirred about with a spoon till of a proper consistence. A cold bread-and-water poultice is sometimes used to allay inflammation. Among the other substances employed in the making of poultices are oatmeal, mustard, vinegar, yeast, charcoal, horsemint, digitalis, alum, sugar of lead, carrot, and sorrel. Considerable care is necessary in making the poultice of the above consistence. It should be sufficiently thick to maintain a certain form when applied and yet to accommodate itself easily to the part.

ABSTRACT (*See FIVE DISEASES OF THE CATAARRH, or COLD, &c.*) [*Gr. καταρρεῖ, to run down*] is the most common of all the disorders to which the human body is subject more particularly in variable climates, like our own. There are two kinds of this disease,—the one a common cold, the other, influenza or epidemic cold. (For an account of the latter see *INFLUENA*.) A common catarrah is an inflammatory state of the mucous membranes of the head or chest. In the former case it is called cold in the head or *coryza* in the latter, cold on the chest, or *boucheitis* (which see) *Symptoms*.—The symptoms of a cold in the head are a sense of uneasiness, heat and stufling in the nostrils, diminution or loss of smell, dull, heavy pain in the forehead, inflammation of the eyes sneezing, and a slight impediment in breathing. Generally, it extends also to the throat and chest, causing hoarseness, cough and difficulty of breathing. Frequently there is also a general derangement of the system, loss of appetite, lassitude, chilliness, succeeded by dry feverish heats, and stiffness of the joints. The nostrils discharge a fluid at first thin and acrid, but which afterwards becomes thickened and often purulent. The common cause of this disease is exposure to a cold or damp atmosphere, or to draughts, especially when the surface of the body is warm or perspiring. It is frequently occasioned by passing directly

Cateschu.

from a warm into a cold atmosphere, and, we believe, even more frequently by passing immediately from a cold into a warm atmosphere. Indeed, any sudden atmospheric change is apt, in delicate persons, to produce cold, but in passing from a warm room to the cold air people generally take some care, though they are not generally aware that the like danger attends passing directly from the cold air into a heated room and hence do not provide against it. *Treatment* — the treatment of a common cold is usually a simple matter. Confinement to the house for a day or two, a warm foot bath diluent drink, abstaining from animal food and various other fermented liquors, and a dose or two of some gentle laxative are usually sufficient to remove the disease. There is also what is called the *dry method* of cure which has the advantage of not requiring confinement to the house, though otherwise, some might be inclined to regard the cure as worse than the disease. It consists simply in abstaining from every kind of drink or liquor or meat to none, being allowed with the disease is *gunc*. Dr. William, its inventor, states that the necessary privation is not hard to bear and that a cure is effected on an average in six to eight hours. He allows without recommending, a table spoonful of tea or milk for the morning and evening meals, and a wine glassful of water at bed-time. The principle acted upon is that of cutting off the supply of watery materials to the blood, and thus leaving nothing to feed the secretion from the inflamed mucous membrane. The best preventive against cold is the daily use of the cold bath and this is the best means that can be adopted by those who have an habitual tendency to this disease. It should however be begun in summer and the water ought to be at first tepid but after being begun, the practice may be continued through all the winter. (See BATHING.)

Catechu, *ka'chu* [*Tap* & *ka*, a tree, *cha*, juice], called *kut* or *kutch* by the natives of India, is principally an extract prepared from the inner brown colored wood of the *Acacia Catechu* but the term is now applied also to other extracts similar in appearance and properties. Some of the catechins of commerce is prepared from the leaves of *Acacia Catechu* and a kind called *Gambir*, or *Terrapontica*, from the leaves of *Uncaria Gambir*. This last, *Catechu-pallidum*, or pale catechu is the only kind that is now official. It is imported in cubes about an inch in diameter, or masses formed of coherent cubes. Lascinally they are brown or reddish brown, internally ochreous, or pale brick red, breaking easily with a dull earthy fracture. The taste, bitter, very astringent, and mucilaginous, succeeded by slight sweetness. It is entirely soluble in boiling water. Catechu is used as an astringent

Cathartics.

externally or internally. It is useful as a lotion or ointment for indolent or ill-conducted ulcers, where there is copious discharge, also as a gargle in relaxed sore throat. Internally it is used in diarrhoea unaccompanied by inflammation, in doses of 10 to 30 grains. The infusion is made of 20 grains of the powder, and 30 grains of bruised cinnamon bark with 10 fluid ounces of distilled boiling water, — dose, 1 to 2 fluid ounces, tincture, 2½ ounces of the coarse powder, and 1 ounce of cinnamon bark bruised, macerated for seven days in a close vessel with 1 pint of proof spirit, and then strained — dose, 1 to 4 fluid drachms. Catechu lozenges are made of 20 grains of the powder, 25 ounces of refined sugar in powder, 1 ounce of gum acacia in powder, 2 fluid ounces of gum acacia, and a sufficient quantity of distilled water, mixed together, divided into 720 lozenges, and dried in a hot chamber with a moderate heat. — dose, 1 to 6 lozenges. Catechu contains a large proportion of tannin, very similar in properties to that of galls, also a peculiar principle called *catechic* (See ACACIA, ACACA, UNGALIA.)

Catua, *ka'thu*, a gen. of plants belonging to the nat. ord. *Celastraceae*. The most important species are *C. edulis* and *sphaeros*, two shrubs occurring in Arabia. The young shoots, with the leaves attached, of these plants constitute the famous drug called *kat*, *kat*, or *kafta* which is showed by the Arabs and is said to produce great hilarity of spirits, and an agreeable state of wakefulness. A decoction is also made from it and used as a beverage, like our tea; its effects are described as being somewhat similar to those produced by strong green tea.

CATHARTICS, *ka'�ar'tiks* [Gr. *kathareo*, I purgo or purify]. In Medicine, is a term applied to such substances as, taken internally, cause a special irritation of the intestinal canal, and increase the quantity or number of the saline evacuations, in other words have a purgative effect. Those which act mildly are usually called *aperients* or *laxatives*, those which act violently, *drawers*; those which produce copious watery stools, *hydragogue*; those which favor the secretion of bile, *chloragogue*. Cathartics act upon the system in different ways, and serve different purposes, and in each case that has to be selected which is best fitted to meet the circumstances. Laxatives are employed when we wish to evacuate the bowels with the least possible irritation, and include rhubarb, senna, castor oil, tamarinds, prunes, confection of senna, carbonates of magnesia, bicarbonate of potash, and the fixed oils as castor, almond, olive, linseed oil. Saline enphlegitis, or ceiling cathartics increase the peristaltic motion of the alimentary canal and augment the excretion of fluids, thereby giving rise to watery

Catheter.

stools. They are the sulphates of manganese, potassa, soda, &c. More active than the above are the *severe stimulants*, as senna, rhubarb, aloes. Senna is employed where we want an active but not very irritant or *severe purgative*, rhubarb is used in debilitated and relaxed states of the bowel, and has a subsequent tonic effect, aloes is slow in its effects, and acts more particularly upon the colon and rectum. *Diastatic cathartics* are such as jalap, scammony, camomile, croton oil, colocynth, citrullum, &c. They act powerfully and rapidly upon the bowels. *Macerated cathartics*, as hydragyrum cum creta pilula hydragyrini, and calomel, are specially valuable from acting on the liver. Cathartics serve not only to clear the alimentary canal, they purify the blood by drawing off much of the serous portion; they stimulate the action of the absorbents in all parts of the body and act as counter irritants in inflammatory disorders. "Purging," says Sir Thomas Watson, "is an expedient which in cases of violent inflammation or high general fever, should scarcely ever be omitted. To keep the bowels what is called open, forms indeed a part of the antiphlogistic regimen, but in acute inflammatory diseases active purging is of very great service. Those two points are gained by it the intestinal canal is freed from accumulated feces or other matter, which, by their bulk or their acrimony, might prove irritating; and at the same time depletion is carried on by means of the serous discharge which is produced from that large extent of mucous surface. There are some cases of inflammation in which the operation of purgative medicines is of especial benefit as in *inflammatory affections of the head*, either external or internal, of which part these medicines avail; or cause depletion in a very sensible manner."

CATHETER., *cathe'-ter* [Gr. *kathētron*, I put down or into] is the name of an instrument employed for drawing off urine by introducing it into the bladder. It is a long tube, usually formed either of silver or gum elastic, open at the handle, and having at the sides, near the point, holes or eyes, into which the urine flows, and is thus carried off. Those for males are usually from ten to eleven inches in length, and considerably curved towards the point, those for females are much shorter and nearly straight. The introduction of the catheter is an operation requiring a considerable degree of tact and skill, and should be done with great caution.

CATHARIS., *ka-thar'-is* [Fr. *chardier*, from Lat. *calidus*, warm], is a kind of warm broth, composed of gruel, wine or beer, sugar, and spikenard given to the sick.

CATCH., *cauch* [Lat. *cauda*, a tail], is a thin membrane, sometimes found encompassing the heart of a child when born. This was formerly regarded with great superstition,

Cells

it being held to denote that the child so born would be very fortunate, and escape many dangers. A caul was also believed to confer the like benefits upon its possessor, and hence they were frequently sold at a high price. They were regarded by seamen as an infallible preservative against drowning.

CAUTIFLOWER (*See Bassia*)

CAUSTIC *keas'ik* [Gr. *kaustikos*, from *kaos*, I burn], is applied to such substances as burn or destroy the skin and flesh by acting chemically upon them. The caustic prun especially used in practice are the nitrate of silver or lunar caustic, and potassa fusca, common caustic, or caustic potash.

CAUSTIC POTASH (*See Potash*)

CAUTERY *keas'ri* [*to re* in a burning or searing of morbid flesh by a hot iron or by some lighted inflammable substance or by certain medicines, the former mode being termed *actual cautery*, the latter *potential cautery*]

CAVIALE OR **CAVIAZ** *ka've-a-zé* [Sp. *cavial*, Arab. *quban*, from the Arab word *qabar*, signifying to press or strain, and *seson* with fat] an article of food prepared in Russia from the roe of the sturgeon or some other large fish and made by washing it in strong vinegar, and afterwards salting. The taste for eating caviale is acquired, most people at first finding it "most incinct and flabby knoll" and oily, taste very disagreeable.

CAVENDISH PEPPER (*See Cayenne*)

CHAMOMUS, *eh-am'-us* [*the name given by Theophrastus to a spiny plant*] a genus of plants belonging to the art. of *Rhamnaceae*. The young shoots of *C. annua* are used as an aromatic and in New Jersey the leaves are employed as a substitute for tea, hence they are commonly known as New Jersey tea.

CEDER *se'der* [Fr. *cedre*, the cedar-tree, its wool having an aromatic resinous-scent like it], a gen. of tropical trees the type of the nat. ord. *Cedrelaceae* *C. fibrosa*, *C. Zona*, and other species, have fibrous and istringent barks, which have been used as substitutes for cinchona.

CEDRONIC ACIDS (*See Sinaia*)

CEFLANDINE (*See Chelidonium*.)

CELL, *cel'* [Lat. *cella*, a cell], in Phys., are minute closed vesicles, or bags, formed by a membrane in which no definite structure can be discerned and having a cavity which may contain matters of variable consistence. These cells, remaining as separate corpuscles in the fluids and grouped together in the solids, persisting in sound casts, with but little change in others undergoing a partial or thorough transformation produce the varieties of form and structure met with in the animal and vegetable textures. In other words, they constitute the elementary form of all organisms, vegetable or animal. The embryo

Cellular Tissue.

animal, as well as the embryo plant, is in its early stages, entirely formed of cells of a simple and uniform character and it is by a gradual transformation in the progress of development that some of these cells become converted into the diversified elements of a complex fabric. Indeed it is now generally believed that the cell structures are the agents by which nutrition, secretion and reproduction are carried on. Every cell owes its origin to some existing cell. In plants the most common mode of multiplication is the subdivision of the original cell into two halves. Some time the new cells originate in little buds like prominences on the surface of the parent cell, which, after a time, become detached and form cells. Cells have properly a spherical or rounded shape, but they assume various forms from coming in contact with other cells. The nucleus is a small round or oval body in the interior of the cell sometimes lying free but at other times attached to the cell wall and averaging in diameter in the animal cell, from $\frac{1}{16}$ to $\frac{1}{4}$ of an inch. (See Huker's Manual of Human Physiology.)

MOLLER'S ANATOMY AND PHYSIOLOGY OF THE VEGETABLE CELL. Carpenter's Principles of Physiology. Quain's Anatomy.)

CELLULAR TISSUE, *cellula* is the cell name given to what is now commonly known as nuclear reticular or connective tissue. It is composed of a large number of small transparent fibrils each about $\frac{1}{10}$ of an inch in diameter crossing each other in all directions and leaving small open spaces or *areolets* whence its name of areolar tissue. This is one of the most extensive tissues in all the tissues of the human body, forming the connecting medium of all the others. It is very sparingly supplied with blood vessels and never has been found distributed to it.

CELLULAR TISSUE plants composed of cellular tissue only, forming one of the two great subdivisions in De Caenot's system of classification.

CETRIS *cer-tis*, a gen of trees belonging to the *Ulmaceae*, or elm order. The first of *accidentales*, which is commonly known as the "Sugar-berry" or Nettle tree has a smooth, astringent taste, and has been used with some success in dysentery. *C. orientalis* has aromatic properties.

CETRABILIA, *cer-ta-bil-i-a* [from Gr. *ker* hole, head] a gen of plants belonging to the mallow order. *C. brasiliensis*. The annulated root of *C. speciosa* is the official specieatum of the British Pharmacopoeia. It is known as *fluted Brazilian*, or *Lasiocarpus* wha is the only sort commonly met with in this country. It is collected in all seasons of the year, but chiefly from January to March, and is imported from Rio Janeiro, Bahia, and Pernambuco. It is

Cerasus.

in pieces of 3 or 4 inches long, about the size of a small quill, of a greyish or light-brown colour, contorted and irregularly annulated. It consists of two parts—a cortical or active portion, which is brittle, and a slender, tough, white woody center. The powder is pale brown, with a faint aromatic odour and a somewhat acrid and bitter taste. When given in large doses of 1, to 30 grains it acts as an emetic and as a purgative in small doses of a few grains it is expectorant and diaphoretic. Its peculiar properties are principally due to an alkaloid called *sassafro*. The root is turned by maceration for seven days, 1 ounce of the bruised root in 1 pint of sherry wine, as an expectorant 5 to 40 minims as an emetic 3 to 6 fluid drachms. The Compound Powder is composed of half an ounce of the powder, half an ounce of opium in powder, and 4 ounces of sulphate of potash in powder. Dose, 5 to 15 grains. This is otherwise known as Lovell's powder and is one of the most valuable of our sudoretics. *Inf. of I. in 1/2 t. water*; 3 ounces of the compound powder, 1 ounce each of squill and musk muscat in powder, and a sufficient quantity of treacle to form a mass of the proper consistency. Dose 3 to 10 grains. The J. Loring's powder is a quart of a grain of I. and 1/2 oz. 1/2 t. to lozenges.

CERATOPO, *se-fol-i-a* [Gr. *kephale*, head] pertaining to the head. Thus, ophthalmic medicines are such as are administered for disorders of the head.

(**CERATITIS** *se-ri-tis* [from Gr. *kephale*, head] inflammation of the brain. (See BRAIN DISEASES OF THE.)

CERA *se-rah* Lit. wax, the prepared honeycomb of the hive bee cleaned by drawing the comb and extracting the honey, and then melting the residue in boiling water. The impurities are skimmed off and the wax is removed from the surface after the water has cooled. It is again melted and strained. This is the *red wax* or yellow wax. *Cera alba* or white wax is made by bleaching the former making it melt in a melted state in small streams upon a revolving cylinder, and thus exposing it in some time to moisture, air, and light. Wax is chiefly used in Medes to form plasters and ointments. (See BEESWAX.)

(**CERAMLY** (See WAX.)

CERASIN *se-rah-sin* [from *cerasus*, the scientific name of the cherry tree] the portion of the gum of the cherry tree which is soluble in cold water.

CERASUS, *se-rah-sus*, a gen of trees belonging to the nat ord. Rosaceae, sub-ord. Amygdalae. Several species or varieties of this genus produce the well-known fruits called cherries. The varieties usually cultivated in our gardens are supposed to have been derived originally from two wild species, *C. avium* and *Algericus*. Both have

Ceratum

white flowers in clusters or nearly sessile umbels, and both are generally regarded as natives of Britain and of the middle and south of Europe. The timber of *C. avicinaria* is valuable for the purposes of the cabinet maker, turner, and musical instrument maker; and the leaves have been used as a substitute for tea. The bark of the species *C. caprea* possesses astringent and refrigerant properties that stripped from its root is used in Mexico as a remedy against dysentery. The leaves of *C. officinalis* contain so much hydrocyanic (prussic) acid as to prove poisonous to cattle that feed upon them. Most parts of the species *C. Laurel*, the cherry-laurel, but especially the leaves and seeds, are poisonous. The poisonous effects are supposed to be owing to a volatile oil containing hydrocyanic acid. Cherry-laurel water obtained by distilling the leaves with water, is used medicinally for similar purposes as hydrocyanic acid. The kernels of the species *C. occidentalis* a native of the West Indies and others are used for the purpose of flavouring liqueurs such as cherry brandy, Kirschenwasser, Maraschino, and Nectar. The species *C. Padus* or bird cherry has similar properties though less powerful than those of the cherry-laurel. *C. cerasina* the choke cherry, has astringent and refrigerant properties, and its fruits are commonly mixed with pemmican in North America. The inner bark of the *C. veratrum* the wild or black holly of the Western States of America, forms a tonic and sedative drug which has been extensively prescribed of late in America and is beginning to receive the attention of European practitioners. It is used as a tonic instead of cinchona and as a sedative for the alleviation of gout in local irritation. It is taken from any part of the tree, but preferably from the root. It has a lively cinnamon colour, and when fresh, a characteristic odour, like that of bitter almonds.

CERATUM, OR CERATE (See OINTMENT)

CEREALS [Lat. *cerealia* from *Ceres*, the goddess of corn] is a term applied to the grasses which are cultivated for human food viz., wheat, barley, rye, oats, maize and rice. They are for the most part distinguished by the large quantities of starch nitrogenous compounds and phosphoric acid, contained in their seeds and which it is the object of cultivation to develop as much as possible. With the exception of rice they all contain nearly the same amount of nitrogen, in addition to which, wheat possesses a peculiar glutinous substance, called *gluten*, which renders wheat flour so well adapted for the making of bread (See Watt's "Dictionary of Chemistry")

CEREBELLUM (See BRAIN)**CEREBRUM (See BRAIN)**

CEREMENTS, *cer'ements* [Lat. *cera*, wax], were cloths dipped in melted wax, with

Cetaceum

which dead bodies were enfolded when they were embalmed.

CERARVIS, FIRMAMENT, OR YEAST, is the frothy matter which makes its appearance on the surface of wort, when fermenting in the process of making beer. It is a light soft substance of a greyish colour, and readily undergoes the putrefactive fermentation if kept moist, but may be kept for some time if dried. It is composed of vesicles containing granules, which are, in fact, a species of fungus, to which the name of *Torula* (*ceraria* is given). Yeast is a tonic and antiseptic but it is chiefly applied in the form of poultices, fomentations, and sloughing ointments. Yeast poultice *Cetaplasma fermentans*, is formed by mixing six fluid ounces of beer with a like quantity of water heated to 100°, and stirring in gradually 14 ounces of wheaten flour. This mixture is then placed near the fire till it rises.

CERIUM or *cerium* symbol (c), equivalent 46, is an element in cerite, lanthanite, and with other minerals. It forms two oxides—a protoxide CeO , and a sesquioxide Ce_2O_3 both of which yield salts with acids. The oxide of cerium is an insoluble salt, obtained as a precipitate by adding solution of ammonia to a soluble salt of cerium. It is given in doses of 1 to 2 grains in cases of obstinate vomiting produced by pregnancy, hysteria, or other causes, and in some forms of pyrexia.

CEROTIC ACID or *ceric*, is acid obtained from beeswax by dissolving the wax in hot alcohol and crystallizing. Cerotic acid contains about 22 per cent of cerotic acid. It is fat-like and produces cerotic acid, when heated.

CERULIAN or *cerulian* Bot. a genus of palms. The species *C. ulei*, a native of South America, yields wax, which is applied to many useful purposes.

CERUMEN or **SPERMACETI**, *cer'um'en*, is a crystalline pearly white glistening substance, with little taste or odour, obtained from the head of the sperm whale, *Moby-Dick*. It is found, mixed with oil in cells in a peculiar cavity, along the upper jaw of the animal. The oil is separated from the spermaceti by boiling, and the latter is further purified by distilling, pressure, fusion, and the action of a weak solution of potash. It is scarcely unctuous to the touch, does not melt under 100°, is insoluble in water, slightly soluble in alcohol, more so in ether, and readily in fixed and volatile oils. It is best purified from any oil it may contain by boiling in alcohol. Spermaceti ointment, *Umquerum Ceracei*, is formed by melting together, with a gentle heat, 5 ounces of spermaceti, 2 ounces of white wax, and 1 pint of almond oil, and stirring constantly while it cools. This is a mild and simple dressing for healing blisters and excoriated surfaces.

Cetraria.

CETRARIA, *set'er-a-ri-a*, a gen. of lichens, which includes the well-known Iceland moss. This lichen, which has been named *C. islandica*, is officinal in the British Pharmacopœia and is employed both as a nutritious food and as a mild mucilaginous tonic in catarrh and consumption. Combined with coccos, it forms the article known as Iceland moss (coco), which was originally prepared by Mr Dunn, of London. Two kinds of starch are found in this lichen—one called *turbin* starch, and the other *nutra*; also a peculiar bitter principle, which has been named *cetrarin*. When used for food only, the plant should be deprived of its bitterness, either by heating it twice in water near the boiling-point, or by digesting it in a weak alkaline solution, formed by adding half an ounce of carbonate of potash to about a gallon of cold water, and afterwards washing it with pure water. The officinal direction of Iceland moss, *Dicotom Cetraria*, is formed by first washing one ounce of the moss in cold water, to remove impurities, then boiling it in one pint of distilled water for ten minutes in a covered vessel; afterwards, strain while hot, then pour distilled water over the contents of the strainer until the strained product measures a pint.

CERVADILLA (*See AGAVE*).
CHYON Moss (*See GRACILARIA*)

CHALK, *tlaak* [Lat. *calc*, lime], a variety of limestone or carbonate of lime of a soft, earthy nature, generally of a yellowish white colour, and sometimes pure white. It often forms streaks of great size. It has an earthy texture, is easily broken, and is rough to the touch. After being burnt into quicklime chalk is converted into mortar, in which shape it is much used. Perfectly purified chalk, when mixed with vegetable colouring matters, such as turmeric, litmus, and saffron, forms pastel colours. Medicinally chalk acts as an absorbent, antacid, and mild diuretic. Taken internally it causes constipation and is hence frequently used to check diarrhoea. From acting on the free acids of the stomach, however, its frequent use is injurious. Care should be taken, after using it for some time, to clear out the bowels, as it tends to accumulate in the intestines. It is also used externally as an absorbent and diuretic to moist excretions, ulcers, burns, scalds, &c. For medicinal use it is usually prepared by elutriation, or washing, so as to free it from impurities, and is afterwards dried in small masses usually of a conical form. This is prepared chalk, *creta preparata*, a white amorphous powder, effervescent with acids, and dissolving with only a slight residue in diluted hydrochloric acid. Dose, 10 to 60 grains. Chalk mixture, a very common form in which it is given to check diarrhoea arising from acidity, is formed by saturating $\frac{1}{2}$ ounce each of prepared chalk

Chaps.

and gum acacia, in powder, with $\frac{7}{8}$ fluid ounces of cinnamon water, and afterwards adding $\frac{1}{2}$ fluid ounce of syrup. Dose, 1 to 2 fluid ounces every three or four hours. The aromatic powder of chalk contains powdered cinnamon, nutmeg, saffron, cloves, cardamom seeds and refined sugar, and is an excellent antacid stimulant and cordial. Dose, 10 to 60 grains. The aromatic powder of chalk and opium contains $\frac{1}{2}$ ounce of opium to $\frac{9}{10}$ ounce of the above, and is given in doses of 10 to 40 grains. *Hydroxyquinum cum creta* or mercury and chalk, is formed by rubbing together 1 ounce of mercury and 2 ounces of prepared chalk in a porcelain mortar, until the metallic globules cease to be visible, and the mixture acquire a uniform grey colour. Dose, 3 to 8 grains.

CHALIBATE SPRINGS *lith-e-as-t*, natural waters containing iron in solution. For an account of the most famous chalybeate springs *see MINERAL WATERS*.

CHAMOMILE (*See ANTHIMUS*)

CHAMPAGNE WINE, *sham-pa-n*, is produced from the grapes grown in Champagne, an old province of France. This favourite wine is divided into two classes,—white and red Champagne. The former is made either sparkling or still. Sparkling Champagne (*é-suez*) is produced by treating the wine in a particular manner during fermentation. The wine is racked off in December, and after being fined with flint-glass, is bottled and securely corked. Carbonic acid is generated in the wine on account of the incomplete nature of the fermentation, and its effervescent qualities depend upon the quantity of that gas dissolved by the fluid. After the sediment which is deposited has been removed, a liquor, composed of a solution of sugar and in Corks are added, and each bottle is tightly re-corked. Still Champagne is first racked off in the March after the vintage. On account of the profitable nature of the manufacture and the popularity of Champagne wine, it is much adulterated with the juice of pears, gooseberries, &c. Very little of the wine sold as Champagne in Paris is really genuine. It generally consists of some cheap light wine, charged with carbonic acid *e.g.* Champagne containing only about 12 per cent of alcohol, a much less proportion than port, sherry, and other strong wines. Its powerful intoxicating effects are due to its effervescence. It is the most speedily exhilarating of all wines, but its effects soon pass off, when not taken in excess. To persons subject to gout, or calcareous formations, Champagne is considered injurious.

CHAMPIONSHIP (*See ASARICUM*)

CHAPS *chaps*, are cracks of the skin, generally occurring on the hands, on days, and occasioned by undue exposure to extremes of heat and cold, more particularly in per-

Charcoal.

sons whose circulation is naturally weak. The part is swollen and inflamed, and is attended with heat, pain, and itching. They are to be treated with cold cream, spermaceti ointment, or lard. The best preventive of chaps is to occasionally rub the parts with glycerine, or a solution of glycerine and water.

CHARCOAL. (See CARBON.)

CHAYOTE, *tah'yo e k'y*, a gen. of plants belonging to the nat. ord. *Piperaceae*, the Pepper family. The dried white spikes of *C. Rosburghii* constitute the long pepper of commerce, which is imported from our Indian possess ions those of *C. officinale* form the long pepper used in America, obtained from the Dutch colonies. Long pepper contains an acid resin a volatile oil and a peculiar crystalline alkaloid called *Peperine*. It resembles black pepper (see PEPPER) in its effects and is used for similar purposes. Dried slices of the root and stem are employed medicinally in India under the name of *Pippala Mula*. The leaves of *C. Edulis* botan-proper and *C. Sulcata*, are chewed by the Malays and other Lascarin races with slices of the betel nut and lime (See BETEL).

CHAISS *shayz* [Fr. *cheese* or *yer*] is the curd of milk salted pressed and dried. Milk is composed of three parts—oil or fatty portion commonly known as cream and which separates in standing being lighter than the rest and the curd and whey the former remaining in oil in the latter until coagulation is secured. In the manufacture of cheese the acid is supplied by the whey which, when the dried mass of the curd contains a large amount of vinegar juice and appears to be the natural milk curd. It is prepared by stirring and drying the inner membrane of the stomach of a sucking calf. When required it is a piece is soaked in some milk or water whey and the whole added to the warm milk that is to be curdled. When the curd has coagulated, it is separated from the whey by straining and pressed in ring or hoop, from which it is conveniently removed and wiped to take away all superfluous water. The colour of cheese depends on the milk to which it is added to the milk before coagulation. Both cream and Yorkshire cheeses are soft and keep but well if the fat content is intermediate, and Cheshire, Gloucestershire and Parmesan are hard and intended for long keeping. The variety of colour and flavor in cheeses results from difference of pasture, length of time in keeping, varying proportion of salt and many other circumstances. Cheese forms a strong and nourishing food for those that can digest it, but is only adapted to those who are of robust constitutions, and who take much exercise. It is very improper for persons of weak digestion, or of sedentary

Chemist.

tary habits. It tends to produce costiveness and in no case should it form the principal part of a meal. In small quantity, however, and when well mashed and eaten with a due proportion of bread cheese is nutritious and stimulating to the digestive powers.

CHAGAS, or CHIC or tache' o [Portug. *penteras*] a small black fly peculiar to South America and the West India Islands. This insect burrows in and under the skin, and there deposits its eggs the result being the most painful ulcers. Waterton tells us that on the plantations of Guiana an old woman, known as 'Granny' is specially retained to mind the little children and keep down the chagras. Every evening she examines their feet (the part first ill affected) and at intervals pulling out any chagras she may find sinks into the hole lime juice and Glycerine to paper.

CHAMOMILE *cham'omil'e* [Fr. *camomille*] a small yellow flower, the plant being said a flower at the sun, and dry up at the approach of the swallow], the (Camomile) a gen. of plants belonging to the nat. ord. *Asteraceae*. The species *C. matricaria* is found in waste places and on old walls in this country, and is easily recognized by its small yellow flowers, and the orange-coloured juice which exudes from its stems when plucked. This juice is poisonous and is a popular application for the cure of warts. It has been used with success in the treatment of ulcers of the cornea, and has also been administered internally as stimulant. It yields chloromeric acid.

CHIMIST AND DRUGGIST, chemist a term usually applied to any person who has been apprenticed to a regularly educated chemist or druggist to practice medicine, but who does not act as a visiting apothecary or surgeon. In this country the chemists and druggists constitute a very important and useful class. They sell medicines, simple or compounded according to the prescriptions of physicians, and they also act as medical advisers for the benefit of the poorer classes. The right of chemists and druggists to prescribe even in the manner usually followed in what is called 'private practice,' has been often in question by the literary organs of the medical profession, but the highest legal authorities declare that they may so far prescribe for customers as to advise with them as to the nature and quality, and mode of application of the medicines which they are about to sell, that they may listen to the statements of the customers, and may answer to them and recommend the commodities which will be suitable and beneficial or dissuade them from purchasing or taking things applied for ignorance. The advice given by the chemist and druggist is merely incidental to the sale and dispensing of his wares and drugs.

Chemistry.

and cannot, of course, be made the subject of a charge. Counter-practice has always been a recognised branch of the business of the chemist and druggist, and the Medical Practitioner's Act, 21 and 22 Vict., c. 90, declares that nothing in that Act "shall extend or be construed to extend to prejudicial or in any way to affect the lawful occupation, trade, or business of chemists and druggists, and dentists, or the rights, privilege, or employment of duly licensed apothecaries in Ireland so far as the same extends to selling, compounding, or dispensing medicines." Act 15 and 16 Vict., c. 56, however, declares that it shall not be lawful for any person to assume or use the title of pharmaceutical chemist, or pharmacist, unless duly examined, registered, and certified by the Pharmaceutical Society of Great Britain.

Chemistry., *kem'istrē* [Arab. *kīma*, the occult science, Fr. *chimie*, Ital. *chimica*], "has for its object the study of the nature and properties of all the material, which enter into the composition or structure of the earth, the sea, and the air, and of the various organized or living beings which inhabit these latter." (Fowles.)

History.—The empirical mixing of two substances, possessing different properties, to form a third, differing from either, must have commenced with the first peopling of the earth. The fact was transmitted to others, who improved on it, and experimented on other similar bodies; and thus was a mass of practical information obtained, which gradually developed into chemical manufactures. The origin of chemistry is generally traced to Thubal Cain, the father of metal, between whom and Hermes Trismegistus lies a period of obscurity of which we know nothing. Hermes is said to have been the inventor of alchemy, a notion not entitled to much credit. In any case, Egypt, which is said to have been colonized by his son Mizraim, was the foremost chemical nation of the East, their glass, pottery, colour, and method of embalming their dead, bearing strong testimony to the fact of their having brought the art to a great state of perfection. The practical preceded the theoretical; but by degrees, as men began to think, they began also to observe and theorize. They saw that a gross earthly matter, such as iron ore, became transmuted, as it were, by fire into a hard metallic substance, like iron. What more rational, then, for them to suppose than that gold could be formed in a similar way? The change of earth into metal was to them more wonderful in theory than the change of lead into gold. Thus began alchemy,—that specious monster which entered within the trap-lions of philosophers, to whom it gave stones for bread, but whose labours have not been without their effect in the subsequent progress of

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the science. The origin of alchemy is lost in obscurity. Philology, however, comes to our aid, and points out to us that common chemical words, such as *alcohol*, *alkali*, *aludel*, and others, have an Arabian origin, which plainly indicates that the Arabians, although perhaps not the inventors of the Black Art, were at any rate its most ardent votaries. Gradually another notion stole in. The principles and practice of pharmacy became more general, and a specious logic was brought to bear on the fact that certain salts and liquors of a metallic nature assuaged pain and restored drooping vitality. It was then but one step further to go to find a compound that would prolong life indefinitely. Another object of pursuit was the universal solvent, or alkahest. The first practitioners of alchemy were, no doubt, honest, serious men; but as time wore on there arose a mass of importers who found ready dupes in avivacious people, who were ever ready to buy the secret of unbounded riches. In this way there was formed a mass of almost untranslatable knowledge, carefully concealed from the vulgar by secret symbols, and an absurd nomenclature. Through this accumulation of rubbish there is some golden vestus; and we must never forget that, although alchemy had its philosopher's stone and universal solvent, it also, like us a hundred salts and preparations daily used in our own laboratories. Towards the end of the 15th century arose a set of men whose brains were made in a better mould than those of their predecessors. Putting aside the idea of transmutation of metals, they turned their attention to the discovery of the principles that governed the formation and composition of bodies already in their hands, rather than to the pursuit of chemical chimeras. Paracelsus, though imbued with the fanciful doctrines of astrology and demonology, must always be regarded with reverence for his virtues and pity for his faults. He must ever be considered as the connecting link between the alchemists and chemists. A few of his researches will be sufficient to show that, although full of the maddening hallucinations, he was one of those rare geniuses who have the power of lifting a science from the mud. He was the first to offer a true chemical explanation of the action of mercury, iron, and lead in the human system. He distinguished alum from copperas, showing that the former contained an earth, the latter a metal. He admitted the existence of other elastic fluids besides air. He was aware that animals could not live, and inflammable matters could not burn, without air. To him succeeded Van Helmont, who was the first to distinguish between animal fluids, or vapours, as he called them. After Van Helmont came Boyle, the founder of the Royal Society, one of the most acute experimentalists that ever lived. His

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numerous experiments are marvels of accuracy, bearing even the test of our present knowledge. He and his contemporary Hook made great improvements in the air pump, the invention of Otto Guericke, and paved the way to further discoveries. At the beginning of the 18th century come the names and discoveries of Boerhaave and Stahl, the founders of the phlogistic theory. They found that by heating charcoal with metallic oxides or calces they were reduced to a metallic state. They further noticed that when charcoal was burnt it was entirely dissipated. Upon these facts they founded the theory that charcoal or phlogiston, was a principle which united with the calx to form the metal. This notion appeared to be further borne out by the fact that metals when heated, are converted into calces; the explanation of which was that the volatilized charcoal, or phlogiston, was consumed by the heat. This theory, which was the first general principle applied to the whole range of chemical phenomena, maintained its ground for some time until the discoveries of Priestley tended to overthrow it by proving that the calx or oxide, of mercury, instead of gaining something by being heated, lost something and that that something was oxygen. About this time Cavendish discovered hydrogen and Rutherford nitrogen—experiments being based upon experiment and discovery on discovery, until the Stahlian theory gave way. It was succeeded by that of Lavoisier the father of modern chemical science, who classed and arranged the known chemical facts into a system unparalleled for its precision, extent of view and logical accuracy. His discoveries were few, but it is known on the discoveries of others with wonderful astuteness. From this moment chemistry marched onward with giant strides. It would be impossible to enumerate the whole of the discoveries that have taken place since the commencement of the present century, a few will suffice to show how wonderfully this science has progressed even in our own time. The application of the voltaic current to the decomposition of the alkalies by Davy resulted in the discovery of a dozen or more new metals. The atomic theory of Dalton threw great light upon the composition of units and acids. The invention of the present symbolic notation by Berzelius and the determination of the elementary equivalents soon followed. In 1811 Davy overthrew the notion of Lavoisier, that acids could not exist without oxygen, by proving that hydrochloric acid consisted only of chlorine and hydrogen. In 1812 Courtois discovered iodine, Balard followed some time after with bromine. Element succeeded element until they reached the number of sixty. All this time organic chemistry was making great progress. The vegetable alkaloids began to

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attract great attention, their analyses were made, and new theories founded on them. The early labourers, Lüdwig and Berzelius, threw great light on this branch of the science, which is even to this day the most attractive to many famous chemists. The development of the theory of organic radicles has gone on increasing, fostered by the labours of Faraday, Laurent, Gerhardt, Hofmann, and a host of others, until it has assumed a mathematical precision unknown to any other branch of physical science. The investigations of organic compounds by these philosophers have resulted in a complete change, both in the notation and nomenclature of mineral substances. This theory, which was founded by Gerhardt, and has received his name, will be afterwards explained. The last great discovery has been spectrum analysis, which has resulted in the addition of three new elements to our already bulky list *cassiope* and *rubidium*, by M.ers Hansen and Kirchoff, of Heidelberg, and *thalium*, by Mr Crookes, a distinguished English analytical chemist. The researches of Graham upon the diffusion of salts in solution and in dialysis or the separation of crystallizable and non-crystallizable substances in solution by means of an intervening diaphragm etc amongst the most brilliant discoveries of the age. The researches of Schubert, Schneiter, Brodie, and others, on the allotropic states of bodies seem to point to the compound character of the present elementary bodies. In fact, chemistry at the present day is making such enormous strides that it can only be properly studied in the current scientific journals.

Principles—"It is the province of chemistry," says Professor Miller, "to ascertain the nature of the different substances of which the universe is composed, to trace their mutual relations on each other to effect new combinations of these components with each other, and to define the conditions on which the combinations existing around us are producible." Material substances are endowed with two distinct kinds of properties *physical* and *chemical*—the study of the former belonging to natural philosophy, of the latter to chemistry. The physical properties of an object are those which refer to its condition whether solid liquid or gaseous, the chemical are such as relate essentially to its action upon other bodies, and to the permanent changes which it either experiences in itself, or which it effects upon them. Chemical action occurs when two or more substances so act upon each other as to produce a third substance, differing altogether from the original ones in properties, or when one substance is brought under such circumstances that it forms two or more bodies differing in properties from the original one. All substances are

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either *simple* or *compound*. The simple substances, or elements, so far as known, are 63 in number, and of combinations of these, all the compound substances are made up. All substances, whether simple or compound, are believed to be made up of small indivisible particles, called *atoms*. These can be united with one another, or separated from each other, but in no case can any one of them be broken up or divided into smaller particles, and hence the name [Gr. *atomos*, indivisible]. What the real size, form, or weight of these particles may be, we have no means of determining. The relative weight, however, of the atoms of the different elementary bodies to each other is fixed and those of hydrogen being lighter than those of any of the other elements if taken as the standard. The *atomic weight* then of any of the elements is the relative weight of its atom to that of hydrogen (See *Atomic Weight*). *Chemical attraction* or *affinity* is the force which is exerted between the particles of different kinds of matter, causing them to combine so as to form a new matter with properties peculiar to itself and different from those of its constituents. Chemical combinations do not take place indifferently but in accordance with certain strict rules, or laws. Each particular chemical compound is always constituted of the same elements combined together in the same proportion. It frequently happens, however, that two elementary bodies unite together in more than one proportion and so form different compounds but these are still formed on a uniform plan and the proportions of the elements are in each case related. One substance will unite with another in preference to a third or, in some cases, in preference to any other. This preference is denoted by the term *relative affinity*. By means of this selective action some combinations may be decomposed. When one element can take the place of another element in a compound, so as to form one analogous, it is said to be *equivalent*. Thus 100 parts by weight, of mercury, 80 of bromine, 3, of potassium, 3, of sodium, are respectively exchangeable for, or equivalent in combination to, one part of hydrogen. The relative quantity of hydrogen which can enter into chemical combination being less than that of any other element, its combining proportion is taken as the standard of comparison or unit. The composition of a body may be determined either *analytically* or *synthetically*. By analysis a body is separated into its constituent elements, so as to determine their nature or quality, or their quantity. The former is called *qualitative*; the latter *quantitative*, analysis. By synthesis, different elements are combined, in order to form compounds. That branch of chemistry which treats of the nature and properties of elements and compounds of

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mineral origin, is called *inorganic*, and that which deals with those of bodies of an animal or vegetable nature or the products of such, is called *organic chemistry*. Recent discoveries, however, have rendered the distinction between these two less and less marked, so that it is impossible to define them exact limits. There is, in fact, no definite line of demarcation between inorganic and organic products. Carbon being the characteristic element in all organic bodies, some define organic chemistry as the chemistry of carbon, or of the carbon compounds (See *CARBON*).

Formula.—In alchemy, for the sake of mystery, employed the signs of the different planets to represent the various metals. Modern chemists for the sake of convenience and brevity, have given to every element one or two letters called symbols, which are used, in conjunction with figures and algebraic signs, to express every known compound. The principle upon which modern chemical notation is founded is that each symbol indicates one or more atoms of the element it represents; thus, 1, 2, 3, 4, indicate respectively one, two, three, and twenty-seven atoms of carbon. Two symbols placed side by side signify that they are in close chemical union thus AgO signifies a compound containing an atom of silver united to an atom of oxygen. A comma, separating two or more groups of symbols must be taken to mean that they are not in such intimate chemical union that the groups cannot be separated without decomposition, thus Ag₂NO, represents nitrate of silver which, by certain treatment, can be separated into Ag₂O, oxide of silver, and NO, nitric acid. The sign plus + signifies that the union is still weaker thus, Ag₂NO + HO means nitrate of silver united to an atom of water HO. A number placed on the left of a group of symbols signifies that the whole group, as far as the next comma or plus, is to be multiplied by it thus K₂O + O₃ signifies that one equivalent of potash is united with two of chlorine acid sometimes the group to be multiplied is enclosed in a parenthesis 3(HgCl₂) + 2(K₂SO₄) means that three equivalents of cyanide of mercury are united to two of sulphate of potash. Formulas may be *empirical* or *rational*—the former giving merely the constituents of a compound the latter indicating the manner in which they are grouped. It is evident therefore that a compound can only have one empirical formula, while its rational formulae are as numerous as the theories of its composition. Alcohol, for instance, is represented empirically by the formula C₂H₆O. Rationally it may be represented as the ethylate of water, HO.C₂H₅O, the hydrated oxide of ethyl C₂H₅O.H₂O, as a compound of olefiant gas and two equivalents of water 2HO.C₂H₅, and so on, ad infinitum. Brackets are used

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to denote substitution compounds that is compounds in which one element or group of elements has been substituted or replaced without materially affecting the character of the compound. Two changes have been lately introduced into chemical formulae that it will be well to notice—one in which dashes are used to denote the atomic power of the element, the other a line through a symbol, to signify that its atomic number has been doubled. $\text{Bi}^{\prime\prime}$ means that bismuth has a trivalent power in the act of forming substitution compounds. This invention originated with M. Gerhardt, an eminent French chemist whose views on the subject gradually gained ground, and at no distant day will probably be generally adopted.

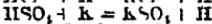
Gerhardt's *Nation* differs from that in common use by the dividing of certain equivalent numbers. In looking through a series of equivalent sides, side by side with the specific gravities of the elements to which they belong, it will be seen that there is a discrepancy between the specific gravities and the equivalents of some few bodies. This will be plain from the following examples—

	Inv	Si e Grav
Hydrogen	1	1
Oxygen	1	9
Sulphur	1	17 (Vapour)
Chlorine	2	12
Bromine	3	18

To remove this anomaly, M. Gerhardt doubles the equivalent numbers of carbon, sulphur, chlorine, selenium, and tellurium on the assumption that *equivalent of elementary gas is a 1/2 vapour plus the true number of atoms in its molecule*. In conditions of heat, 1 mol. of which is equivalent to saying that in 1 mol. of oxygen weighs sixteen times as much as in atom of hydrogen, but as a cubic foot of the former gas weighs sixteen times as heavy as a cubic foot of the latter. According to this new system therefore the equivalents of oxygen, carbon, sulphur, selenium, and tellurium are doubled, and in most chemical bodies these doubled equivalents are indicated by a line drawn through the letters, thus— O-C-S . Besides the changes in the equivalents, Gerhardt revives and fully carries out a theory of the constitution of acids and salts first propounded by Sir Humphrey Davy. According to the present theory, as first started by Lavoisier, Pervelius and others, nitrate of silver would be formulated thus— AgO-Na_3 , being looked on as a compound of nitric acid and oxide of silver, but on comparing this salt with its corresponding haloid chloride of silver a discrepancy occurs, which vanishes, if we consider nitric acid as existing in nitrate of silver, to consist of NO_3 instead of NO_2 . From numerous

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other anomalies, occurring chiefly in organic bodies, Gerhardt came to the following conclusion: 1. That every uncombined acid necessarily contained one or more equivalents of hydrogen. 2. That the bodies hitherto regarded as dry acids possessed no acid properties until united with hydrogen and oxygen. 3. That salts were formed by the substitution of one or more atoms of hydrogen, by one or more atoms of a metal, or some other inert acting as such. Thus, the bodies known as NO_3 , SO_4 , and CO_3 , are neutral and inert until united with an equivalent of water, when they form respectively nitric, sulphuric, and carbonic acids. This brings the haloid and oxyacid salts into perfect harmony, both being regarded as acids in which the hydrogen is replaced by a metal.



Or in other words the acid is regarded as the nitrate, sulphate, or carbonate of hydrogen and the salt is made the nitrate, sulphite or carbonate of the metal. Hence the term nitrate of potassium sulphate is used by Gerhardt, & followed instead of those in ordinary use. Gerhardt uses a general system of arranging compounds according to types, and fully worked out the theory of the formation of all bodies by the substitution of one element for another elements, by others of a similar class referred to as *metals*.

A neutralite.—The present system of chemical nomenclature is due to Lavoisier, and is based on the principle that the name of a compound should as far as possible express its composition and properties. The names of many of the simple elements we have received from the alchemists and were formed on no definite plan. Those elements which have been lately discovered have been named either from some characteristic property possessed by them, or from some word indicating their source. Metals as a rule receive their names, &c., of course tellurium, &c., metalloids are also so called silicon &c., gases in air or gas such as chlorine and oxygen. In several instances theory grounded on insufficient facts has been allowed to influence the name of an element, for example oxygen was named from *oxy*, acid and *genia*, to generate, the Lavoisian theory being that no acid could exist without oxygen. Subsequently, however, it was found that oxygen occurred in all bodies, and that many acids existed that contained hydrogen in its stead. The Lavoisian nomenclature is founded on the fact that when a compound of two elements is submitted to the action of the voltaic current, these elements separate, one (the electro-positive body) being attracted by the negative pole, and the other (electro-negative body) going to the positive pole. As a rule, it was found that the metalloids were

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electro negative, and the metals electro-positive. The simplest combinations of two elements are termed binary compounds, and fall naturally into two divisions—bases and acids. Bases always end in *ide*, and all compounds of different proportions of a metal with a metalloid. The proportion of the metalloid is indicated by the addition of a Greek or Latin numerical particle thus we have the *proto* (sequoia), *bisulphite*, and *teroxide* of various metals, indicating that these compounds contain one, one and a half, two and three doses of oxygen to one of metal. When the metal is in excess Greek prefixes are used we have for instance, the *dicarbide* or *trioxide* of a metal showing that the metal is in a duple or triple dose. Generally the prefixes *sub* and *meta* are used to indicate the excess of metal over metalloid, and vice versa. The termination *ate* was formerly used in several cases such as *sulphuret*, *phosphuret*, &c., but it is now abandoned in favour of the terminations *ite*. The compounds of the metalloids with each other are named on the same principle. When the dose of oxygen is large the compound is generally preceded by the prefix *per* as in *peroxides* thus we have O_2O_3 , the sesquioxide of chromium which is a basic but by increasing the *oxy* dose we obtain Cr_2O_7 which is an acid capable of forming salts with bases. The amount of oxygen contained in a compound is indicated by the terminations *ite* or *ate* or the prefixes *proto*, *sub* or *meta* or *per* above. The compounds of acids with bases are always indicated by the termination or prefix of the word giving the name of the acid. Acid ending in *ic* and *ous* form a suffix extending in *ite* and *ate* the prefix being of course reversed. When the *o* dose with which the acid is mixed in a protoxide or peroxide the prefixes *proto* and *per* are added. For instance the permanganate and protomanganate are the nitrates of the prototitanate and peroxo titanate of the metal. When the dose of acid is greater or less than the base, the prefixes *sub* and *meta* are used as the *subcarbonate*, *bicarbonate*, and *tercarbonate* of soda. In double salts the name of the base only is omitted, or the *tartrate* of potash and soda. There is a vast variety of acids and salts which have the same composition but different properties. They are distinguished from the ordinary kind by the prefix *meta*, thus we have *phosphoric acid* and *metaphosphoric acid*. The prefix *proto* signifies that the acid or salt has been obtained by heat, for instance, we have *pyrogallic acid*, produced in this way from gallic acid. In organic chemistry the nomenclature is in many cases somewhat confused. This is not owing to any want of proper principle in the formation of new words, but rather to the differences of opinion existing amongst chemists as to the composition of the substances indicated. Thus amine is called *phenylamine*, *phenylia*,

Chenopodium.

and *benzidam*, by different chemists, who each have a theory touching its composition. Organic chemistry may be defined as the chemistry of organic radicles or compounds containing carbon, which act in every way as elements. Organic radicles generally terminate in *yl*, and mostly contain carbon, hydrogen and oxygen. Thus we have *ethyl*, the radical of ether which forms oxides and sulfides in the same manner as iron lead or any of the purely elementary bodies. There are also compounds corresponding to the electrically negative bodies *ethylen*, *hydrogen*, *nitro gen*, &c. We have, for instance *cyanogen* and *amidogen* which form *cyanides* and *amides*, similar in their properties to *chloride* and *oxides*. The termination *ol* or *ole* is generally applied to neutral compounds of carbon and hydrogen, incapable of either basic nor acid properties and are mostly liquids such as *benzol*, *tyrol*, *quinol*. The termination *er* is applied to other neutral substances generally solid, such as *paraffin*, *cyclothal* and *stearin*. The ending in *er* or *er* are generally bodies allied to the alkalis in their properties. We have, for instance *gum* or *gumma*, *starches* or *starch*, &c. &c. which form salts with acids. Many of those which contain *amine* are soluble in *water* and are considered substitution compounds of that body, in which one or more equivalents of hydrogen are replaced by an organic radicle. If two or three equivalents are replaced the prefix *di* or *tri* is added to the word, for instance, we have *dimethyl* and *tripropylamine*, the compound of which is plainly indicated by their names. When the hydrogen is replaced by different bodies their names are prefixed. We have for instance *ethyl* and *propylamine* which consists of one equivalent of nitrogen united to one each of the organic radicles ethyl, methyl and amyl. There are also substitution acids as well as bases such as *bromobenzoic acid* and *chloroacetic acid*, in which bromine and chlorine are substituted for an equivalent of hydrogen. Thus, although these names appear unintelligible and unwieldy to the superficial observer they are easily understood by the chemical student as any term including several nouns indissolubly associated would be to an ordinary individual. (See Roscoe's "Elementary Chemistry," Williamson's "Chemistry for Students," Miller's "Elements of Chemistry," Fowles' "Manual of Chemistry," Oaking's "Practical Chemistry," Franklin's "Lectures and Notes on Chemistry," Witte's "Dictionary of Chemistry")

CHENOPODIUM. *cheno-pod-e-um* the typical genus of the hat or *Chenopodiaceae*. The seeds of *C. Quinoa* contain a red granular, which are remarkable for being the smallest hitherto noticed. They are known under the name of *pepsi rice* and form a common article of food in Peru. C. *Bonne Nemoens*

Cherry.

is the English mercury, a plant formerly much used as a pot-heb. The seeds of *C. arachnium* (wormseed) are largely employed in North America for their anthelmintic and antispasmodic properties. *C. vulgare* (stinking goosefoot), an indigenous plant, is a popular emmenagogue.

CHERRY and CHERRY LAUREL (*See* *CHERRIES*)

CHICKEN (*See* *THORAX*)

CHICKEN-WATER-IN-THE- (See HYDROTHORAX)

CHICKEN-NUT (*See* *CASTANEA*)

CHICKEN POX, *tashik en por* in Med., is the name given to an eruptive disease, usually of a mild nature, and bearing some resemblance to small pox. Some are of opinion that it is only a mild form of small pox, but it is generally regarded as a distinct disease. It is mostly confined to children, and is of a contagious nature. The pustules, fever is very slight and the vesicles are filled with a watery fluid, rarely with yellow matter or pus, and pass away in the course of four or five days leaving only slight crusts or scabs, which fall off without leaving any permanent mark. The disease is rarely attended with danger, and generally ill that is necessary is to put the patient upon spare diet and to administer a dose or two of some mild aperient.

CHICK PEAS (*See* *CICER*)

CHICKWEED (*See* *STELLARIA*)

CHICORY (*See* *CHICORIUM*)

CHILBLAIN, *tashik blain* (Aug.-Sept. chil blain), a pustule or blister), is an inflammatory affection of the skin occasioned by exposure to sudden alternations of heat and cold, and usually affecting the hands or feet. Young persons are more subject to it than adults, and females than males. The part is red and swollen and is attended with heat and a great sense of itching. Chil blains are generally produced by persons holding their hands or feet to the fire immediately after they have been exposed to severe cold. This should be carefully guarded against and a uniform temperature as far as possible, maintained by the use of warm socks and gloves. The itching is best removed by frequently rubbing the part with some stimulating application, as camphorated spirits of wine. One of the best means of preventing or removing chil blains on the hand will be found to be washing them nightly before going to bed, with warm water, which allays the heat and promotes the general circulation. If the parts should ulcerate, they are often very difficult to heal, but the best application to use is spermaceti ointment.

CHIMES. (*See* *CARICUM*)

CHIMAFILLA, *tashka filila*, a genus of plants of the nat. ord. *Fyrolaceae*, or winter greens. The *C. umbellata*, or umbellated winter-green, called also *Pipassewa*, is a small evergreen shrub found in the woods in certain parts of Europe and Asia, but

Chloral.

more commonly in America. The fresh leaves when bruised emit a peculiar odour and have a bitter astringent taste. Given internally it is tonic and diuretic, and is recommended in dropsy, chronic affections of the urinary organs, and in scrofulous complaints, it is usually given in the form of decoction (1 ounce to a pint of distilled water) in doses of 1 to 3 fluid ounces.

CHIN-COUGH (*See* *HOOPING COUGH*)

CHIRIBITA or CHIRATA, *tash ret ti* a species of plants of the genus *Ophelia* belonging to the nat. ord. *Gentianaceo*. It is a native of Northern India and has long been employed there as gentian in Europe. The stems brought to this country are about 1 foot long, of the thickness of a large quill round, smooth pale, lily clad with the branches opposite, flowers small, numerous, pinkish, and the whole plant with little life. In its medicinal properties it resembles gentian, strengthening the stomach, obviating flatulence and diminishing the tenacity to acidity. It is given in the form of infusion (1/2 ounce cut small and made in a covered vessel half an hour in 1 pint of distilled water at 120° and then strained) in tincture (2 fluid ounces macerated for 48 hours in 1 pint of proof spirit). Dose of infusion 1 to 2 fluid ounces; of tincture 1/2 to 1 fluid drachm.

CHIRITY, *tash riti* (in che), *tharai* and *gor* a work is a term sometimes used in place of singing from song, or put simply be performed by the harp (*See* *CHIRAT*)

CHLORAL, *klor al* is a thin oily colourless fluid of a peculiar penetrating smell which excites tenesmus with but little taste. It is prepared by passing perfectly dry chlorine into hydrochloric acid solution whence the name. It is freely soluble in water, alcohol, and ether boils at 10° and has a density of 1.5. Mixed with its own volume of water and evaporated it forms a white crystalline mass called the *Hydrate of Chloral* which has recently been exciting great attention among medical men from its being found to possess properties analogous to those of chloroform, but its effects are produced more slowly, and last for a much longer time. It is administered by the stomach and its action is owing to the production of chloroform in the system by means of the alkalies of the blood. It acts as a powerful sedative on the motor and sensory nerves and seems to have also a contracting influence over the arteries. As a narcotic it is much safer and more certain than opium, and is without any of its unpleasant after-symptoms. The sleep produced is calm and refreshing. In painful diseases, as neuralgia, gout, cancer, burns, &c., in sleeplessness, or nervous agitation, delirium tremens, insanity, and the like it is found to be of the greatest service. Dose, from 15 or 20 to 60 grains.

CHLORANTHACEA, *ko-ro-nth-a-see-a* [*Gr.*,

Chloranthaceae.

klos, green, and *anthos*, a flower], in Bot., a small nat. ord. of dioecious tropical plants in the sub class *monochlamydeae*. The typical genus *Chloranthus* includes several useful species. The roots of the *C. officinalis* and *brachystachys* have been employed in Java as stimulants in malignant fevers, and for their antispasmodic effects. The leaves of *C. insoncans* are used in China to perfume tea. Aromatic stimulant properties are common to all the plants of this order.

CHLORIC ACID. It is formed by passing a current of chlorine through an alkaline solution when the chlorides of the metal and the chlorides of the alkali are formed. It is a colourless strongly acid liquid in oily consistence and a pungent smell. It is not decomposed by heat and its oxidising properties are very powerful. It forms salts which are called *chlorates* which are decomposed by heat; the chloride of the metal being left behind while oxygen is liberated. The most useful of them is the chloride of potassium which is formed by passing chlorine through a hot salt water bath. It is a pale yellow solid which is easily soluble in water. It is also formed by the action of chlorine on potassium chlorate. (See *Potass. Chloride*.)

CHLORINE. [*Gr.* *chloros*, green] — Symbol Cl. Equivalent 35.5. Specific grav. 1.17. — It is decomposed by water and it was discovered by Scheele in 1774 while examining an elio of manganese. It was thought at first to be a compound gas, but Gay Lussac and Thenard separated it, and Sir Humphry Davy proved that it was an elementary body. It is the latter philosopher that bestowed upon it the name of chlorine, from *chloros*, green (Greek) on account of its colour.

It occurs in nature in great abundance, in combination with many mineral substances, such as rock salt also in sea water and in plants as the chlorides of potassium and sodium. It may be prepared in two ways, — either by heating black oxide of manganese with hydrochloric acid or by heating a mixture of black oxide of manganese, chloride of sodium and dilute sulphuric acid. It is a transparent gas of a greenish yellow colour and a powerfully suffocating odour, which, even largely diluted with air, produces great irritation of the air passages. It is about two and a half times heavier than atmospheric air. Water absorbs about twice its volume, it can, therefore, be only collected by displacement or over water water. Under a pressure of four atmospheres it condenses into a yellow limpid liquid, rather heavier than water, and remains fluid and unfrozen at a temperature of — 22° Fahr. With water, chlorine forms a definite hydrate, which, when subjected to a cold of 92° Fahr., solidifies in the form of large yellow crystals. Chlorine is not combustible, but

Chloroform.

supports combustion to a certain degree. Chlorine in common with several other elementary bodies, has the property of replacing hydrogen in its organic compounds. It is in this manner that chlorine bleaches textile fabrics. The brownness of the fabric is due to some brown organic substance, which, when submitted to the action of chlorine, parts with its hydrogen and assumes a colourless form containing chlorine. Another property of chlorine is that of destroying noxious vapours and insectivores. For the same reason, it is used as a disinfectant the action being the same as that mentioned above. Chlorine is possessed of powerful affinities, and unites with all the metalloids and metals. In Medicine when used externally it acts as a local irritant and rubefacient. Inhalated even when mixed with air, it causes a sensation of tightness and suffocation, and violent cough. When largely diluted it occasions a scalding of warmth in the respiratory passages and promotes expectoration. The Solution of Chlorine, made by passing chlorine gas through water, is used externally as a caustic application to warts caused by rabid animals, and, diluted as a wash in skin diseases, and a gargle in purulent sore throat. It is sometimes given in typhus, scarlet fever, and diseases of the liver. It is also used as an antidote in poisoning by hydrocyanic acid or sulphurated hydrogen. The antidote to chlorine poisoning is the cautious inhaling of ammonical gas. Chlorine is inhaled by putting 2 ounces of chlorinated lime into a suitable apparatus, moistening it with cold water, and inhaling the vapour as it arises.

CHLORODIANT. *klor' o daint*, a secret medicine which has been much used of late as an emodynt and sedative. It was first introduced by Dr J. Collins Browne, though the invention has been claimed by others, and has led to some expensive lawsuits. It is composed of chloroform, morphia, hydrocyanic acid, and certain other ingredients. Several attempts have been made to ascertain its exact composition. We give the latest and apparently the most correct, that by Mr Edward Smith. (*Pharmaceutical Journal*, January, 1870). — Chloroform, 4 fluid drachms; mixture of morphia, 2 grains, rectified ether, 2 fluid drachms, oil of peppermint, 8 minims, diluted hydrocyanic acid, 4 fluid drachms; tincture of capsicum 6 fluid drachms; mixture of acetic acid, 1 fluid ounce, and treacle, 5 fluid ounces.

CHLOROFORM. *klor' o form* [pref. *chloro* and *formyl*] C_2HCl . — This interesting compound is produced by a variety of reactions. The most usual way of preparing it is by acting upon dilute alcohol with chloride of lime. Chloroform is a colourless, volatile, mobile, highly refracting liquid, of specific

Chlorosis.

gravity : 497, and boiling at 142° Fahr. It has an ethereal odour, and a sweetish penetrating taste. It is readily soluble in ether and alcohol, but sparingly so in water. The vapour of chloroform has the remarkable property of rendering a person insensible to pain. To Professor Simpson, of Edinburgh, is due the credit of introducing chloroform as an anaesthetic (*See Anaesthetics*). Chloroform is an excellent solvent for sulphur, phosphorus, and iodine. It also readily dissolves fatty and resinous bodies. It is a perfect solvent of camphor, which it left unaltered on evaporation. Chloroform is given internally in doses of 3 to 10 minims as an anodyne, stimulant, and antispasmodic. The spirit of chloroform (2 fluid ounces to 19 fluid ounces of rectified spirit) is given in doses of 20 to 60 minims, the compound tincture (2 fluid ounces of chloroform, 8 fluid ounces of rectified spirit, and 10 fluid ounces of compound tincture of cardamoms), in doses of 50 to 60 minims. The liniment is composed of equal parts of chloroform and liniment of camphor, and is used as an anaesthetic application in neuralgia, rheumatism, painful tumours &c.

Chlorosis *klo rō sis* [Gr. *chloros* green]. In Med. is the name of a disease to which young females are subject, and which is characterized by a peculiar yellow or greenish-yellow hue of the countenance, and hence known as the green sickness. It is usually attended with great debility, palpitations of the heart, difficulty of breathing, pains in the back and loins, and other distressing symptoms. The principal means to be employed in the cure of this disease are gentle exercise in the open air, with nutritious and rather stimulating dietomies, particularly iron, sea bathing, and agreeable society.

(*See THEOBROMA*)

CHOKK DAM *tshokk damp* [Ang.-Sax.], a name given by miners to carbonic acid, as distinguished from fire damp, which contains but little hydrogen.

CHOLESTERA, *koh-le'rd* [Gr. *chol*, bile, and *she*, I flow], is the name given to two or three different forms of disease each of which is characterized by vomiting and purging, with great pain and debility. The mildest form of this disease is known as bilious or British cholera, and usually prevails to a greater or less extent in this country every summer or autumn. It apparently proceeds from some disordered condition of the bile, which is either in excess or too acid, and seems to be produced by cold, suppressed perspiration, unripe or acid fruits, &c. It generally commences with gripping pains of the bowels followed by vomiting and purging, together with heat, thirst, a hurried respiration, and a frequent but weak and fluttering pulse. In favourable cases these

Cholera.

symptoms subside in a few days, leaving the patient in a very weak and exhausted condition, but in severe cases great depression of strength ensues, attended with much anxiety and lowness of spirits, violent vomiting, cold clammy sweats, a hurried and short respiration, hiccup, a low and irregular pulse and the patient sinks rapidly, dying sometimes carried off in twenty-four hours. The severer form of this disease is sometimes called spasmodic cholera, from being usually attended with violent spasms. The Asiatic malignant or pernicious cholera is a much more violent form of disease, and first became known in this country in the autumn of 1831. It commonly comes on without any warning and the patient is frequently a corpse in a few hours. The attack usually begins with sickness and purging, the discharge in this case not being inebious but a thin colourless fluid like rice water accompanied with great prostration of strength and cold clammy sweats. In a short time dreadful cramps insult the extremities and afterwards the abdomen and other parts of the body, the body becomes bent the limbs twisted, the countenance calavorous, the pulse almost imperceptible, the eyes sunken and surrounded by a dull circle the patient sinks into a state of insensibility and, unless a favourable change speedily takes place he soon expires. When reaction does take place, the pulse gradually returns the natural warmth of the body is restored and the spasms and distress of breathing give way. Frequently however, the reaction is accompanied by fever, closely resembling typhus, and which often runs its fatal course from four to eight days. Treatment.—In regard to the treatment of cholera the views of medical men have of late somewhat changed. Sir Thomas Watson, who has recently modified the views expressed in the last edition of his Lectures, says that "one important and guiding rule of treatment is not to attempt by opiates or by other directly repressive means to allay a diarrhoea while there is reason to believe that the bowel contains a considerable amount of morbid and offensive materials. The purging is the natural way of getting rid of the irritant cause. We may favour the recovery by directing the patient to drink copiously any simple diluent liquid—water (cold or tepid), tea, water, barley water, or weak tea and we may often accelerate the recovery by sweeping out the alimentary canal by some safe purgative, and then, if necessary soothing it by an opiate." A table-spoonful of castor oil may be given for this purpose, and after the oil has acted freely "a table-spoonful of brandy may be taken in some thin arrow-root or gruel, and if this be much feeling of irritation with a sense of sinking from 5 to 10 drops of laudanum may be

Cholesterin.

given in cold water. These means will suffice for the speedy arrest of most cases of choleraic diarrhoea . . . If the diarrhoea has continued for some hours, the stools having been copious and liquid, if there be no gripping pain in the bowels, no feeling or appearance of distension of the intestines, the abdomen being flaccid and empty, and the tongue clean, we may conclude that the morbid stool has already purged itself away," and there will be no need for any purgative, but the brandy and laudanum may be given immediately as above "The rule in all cases is not to give the opiate until the morbid poison and its products have for the most part escaped—not to close the door until the 'enemy' has been expelled." In some cases of severe and prolonged diarrhoea it may be necessary to repeat the oil and the laudanum alternately more than once at intervals of three or four hours; if the diarrhoea be associated with vomiting, this should be encouraged, and assisted by copious draughts of cold water. If there be nausea without vomiting, an emetic may be given.

CHOLECYSTIN., *ko-le'stē-tin*, is a crystalline fat matter found in the bile, nerves, brain, and blood, and forming almost the entire substance of gall-stones. It is tasteless and odorless, insoluble in water, but soluble in alcohol and ether. It consists of $C_{18}H_{32}O$. According to Dr Flint of New York, Cholecytin is a product of the destructive assimilation of the nervous tissue, being absorbed from the substance of the brain and nerve by the blood, and eliminated by the liver.

CHONDRIUS, *kon-droos*, in Bot., a gen. of *Alga*. The most important species is *C. crispus* commonly called chondrium, or Irish moss, which is used medicinally for its nutritive, emollient and demulcent properties, being administered in the form of a decoction or jelly ("marmalade"), which has similar properties to always found in the carmine mosses of the shops.

CHOREA, *kor'-ē-a* [Gr. *choros*, a dancing or jumping], is the name of a disease otherwise known as St. Vitus's Disease, and characterized by convulsive motions of the limbs, as of a person dancing. The muscles of voluntary motion are no longer under the complete control of the will, and the power of walking, or of using the arms or hands, is impaired. It is common to both sexes, but it is more common with females, and rarely attacks before the age of eight, or after that of sixteen years. Those of a weakly constitution, or whose health has been impaired by confinement or improper nourishment, are chiefly subject to it. The great cause of it is a disordered state of the digestive organs, producing a certain degree of mental weakness. **Symptoms.**—The patient is at first restless, irritable, fretful, and gloomy. After a time there come on irre-

Chromium

gular and involuntary twitches of the muscles, he cannot walk steadily, or drag one leg after him, the arms become affected, and the muscles of the face, head, and trunk may become, at different times and in different degrees, affected by it. This disease usually disappears under judicious treatment, or as the patient grows up, but occasionally it terminates in epilepsy, paralysis, or idiocy. **Treatment.**—The proper mode of treatment is to restore the tone of the system by tonics (as steel), a nourishing diet, and frequent exercise in the open air, with occasional purgatives, if necessary. Every form of mental excitement is to be guarded against, cold bathing will generally be found very serviceable, and a regular course of gymnastics (such as Ruth's) cannot be too highly recommended. In fact, a right system of education, the exercise of a due moral control, will do much to prevent or cure the disease.

CHROMIC ACID *kro'mik* (Cr_2O_7)—This acid occurs in nature in combination with lead as chrome yellow, and with iron as chrome iron ore. It is prepared by adding one measure of a warm saturated solution of bichromate of potash to one and a half of concentrated sulphuric acid. The acid is added in small portions at a time, the solution being allowed to cool between each addition (chromic acid crystallizes out, and bisulphite of potash remains in solution). Although chromic acid is one of the most powerful oxidizing agents known, it is easily decomposed by light and organic substances. The most useful of the compounds of chromic acid is the bichromate of potash, which forms fine red tubular crystals, which are anhydrous, and remain unchanged by exposure to the air. Both the chromato and the bichromate are extensively used in dyeing and calico-printing. Chromic acid is a powerful caustic, and is sometimes applied to cancerous and other ulcerations. Its action is slower and more gradual and it is said to cause much less pain than other similar applications, but it is deeply penetrating in its nature, and requires to be carefully used.

CHROMIUM, *kro'mi-ūm* [Gr. *chroma*, colour]—symbol Cr, equivalent 26 27, spec. grav., 9—a rather rare element, first shown to be a metal by Vauquelin, in 1797. Its most important ore is the chrome ironstone, a compound of protoxide of iron and sesquioxide of chromium. It is also found as chromate of lead, from which Franklin Vauquelin first obtained it in the metallic state. Chromium is a light grey metal, very brittle, non-volatile, and non-magnetic. As might be inferred from the difficulty with which it is reduced, chromium, in the metallic state, has not yet received any useful application. Its oxide and many of the chromates have received useful applications in calico-printing and china-painting.

Chronic.

CHRONIC, *kro'nik* [Gr. *chronos*, time] a term applied in Medicine to such diseases as are of long duration, as contra distinguished from *acute*—those that soon terminate either in recovery or death.

CHRYSAVITAKUM (*See CORTICIBERIA*)

CHRYSOBALANUM, *krō'zō bālā'nū* [Gr. *chrysos*, gold, *balano*, a nut] a sub ord. of the nat ord *Eococca*. The plants belonging to this division are trees or shrubs, principally natives of the tropical parts of America and Africa. Many of them produce edible drupaceous fruits. The typical genus *Chrysovalana* includes two valuable fruit trees. *C. Jaceo* yields the coco plum of the West Indies and in Brazil the roots, bark, and leaves, are prescribed against diarrhoea and other similar maladies. *C. Latua* yields a fruit which is eaten in Sierra Leone.

CHYSOPHYLLUM, *kyō'fēl lūm* [Gr. *chrysos*, gold, *phyllos*, a leaf], a gen. of tropical trees belonging to the nat ord *Sapotaceae*. The species *C. Cristata* yields a delicious fruit known as the star apple. *C. Buran* has furnished the astrigent bark called Monsain bark which has been much employed in France and Germany. This bark contains an astringent principle called moncuncin, which is analogous to saponine.

CHUTNEY, *chut'nee* [the Indian name] a condiment very largely consumed in India and Great Britain. There are many varieties of chutney but it generally consists of a compound of mangoes capsicum or chillies and lime juice, flavoured with garlic and asafoetida. Several native fruits, such as tamarinds, are often added to East Indian chutneys.

CHYME, *ky'mē* [Gr. *chymos*, juice] is the milky fluid which is formed by the action of the bile and pancreatic juice upon the chyme in the duodenum and absorbed by the lacteal vessels. The use of the chyle is to supply the matter from which the blood is formed and the waste of the living organs repaired (*See Digestion*).

CHYNOUS, *ky'noo's* [Gr. *chyrus*, juice], is the ingested mass formed by the action of the stomach upon the food, and which passes from the stomach into the duodenum (*See Digestion*).

COAGULATION, *kō'āg'yūshon* [Lat. *coacervare*, I heal up], is a term applied to the healing or skinning over of an ulcer or broken surface of the skin.

CICER, *sī'kēr* [from Gr. *kele*, strength] in reference to its qualities, a gen. of plants belonging to the nat ord *Leguminosae*, sub-ord *Papilionaceae*. *C. eriocarpum* a native of the countries around the Mediterranean, produces the edible seeds called chick peas. These are extensively used as food, either boiled or roasted, and are the most common pea-curd pulse of the East. The herbage affords a nutritious food for cattle.

CICERONIUM, *sī'kō-nē'ōōm* [Lat.], a gen. of

Cilium.

plants belonging to the nat ord *Compositae*. The species *C. Inflatus* is the wild chicory or succory, a plant indigenous to this and many other countries of Europe, having numerous heads of bright blue handsome flowers. It is extensively cultivated for the sake of its roots which are sliced, roasted, and ground to form the chicory of the shops, which is sold as a substitute for or more frequently as an addition to, ground coffee. Nearly 100,000,000 lbs are annually consumed in Europe. Much of the chicory used in Britain is of home growth, but still more is imported in the raw state from Holland and other parts of the continent. Though so extensively used instead of coffee chicory does not possess in any degree the peculiarity exciting a strong and hunger-staving properties of that valuable product. The fresh root has been employed in medicine to produce similar effects to those produced by the dandelion root (*See Taraxacum*). *C. Idaea* is the garden chicory in which the leaves of which, when blanched form a wholesome salad.

CICUTA, *si'kūtā* a gen. of plants belonging to the nat ord *Umbelliferae*. *C. vires* the water hemlock or cowbane is a common indigenous plant of a highly poisonous nature. *C. latifolia* is native of America, has crimson roots which from having been mistaken for those of hellebore *Umbelliferis* have not unfrequently led to fatal results.

CIDER or **CIDER**, *sī'dēr* [Fr. *cidre*] the expressed and fermented juice of apples. The apples are thrown into a circular stone trough and bruised by a heavy round stone, turned by horses until the whole are reduced to a pulp called "must." This must is then spread upon a halath several of which are piled together and placed under a screw press. The screw is turned slowly and the juice exudes slow, into a flat tub, from this it is poured into casks placed in a position where there is a free current of air. The liquor ferments, and the clear cider is drawn off from time to time. This is again racked until it is perfectly clear. In England, cider is made principally in the Herefordshire district where the above method of pressing is adopted and in Devonshire, where a new process of manufacture is employed. Cider requires great care in keeping being apt to turn sour and has lately fallen into disuse on account of great quantities of doctored sour cider having been retailed by dealers and publicans. Cider is also made in Normandy, Belgium and Germany. It is largely used in England as a beverage, and is very palatable and refreshing, but it does not possess the tonic and nourishing qualities of beer. It contains from 5 to 9 per cent of alcohol, and is therefore intoxicating when largely partaken of.

CILUM, *sī'lūm* [Lat.], a name given in Anat to the eyelid eyelash, and hence

Cinchona.

the term *ciliary* is applied to the arteries, glands, &c., belonging to the eyelids. (See EYE.)

CINCHONA, *sin-kō'-na*, the typical gen. of the nat. ord. *Cinchonaceæ*. The plants of this genus are natives of the intertropical valleys of the Andes, and are found principally on the eastern face of the Cordilleras, growing commonly at heights varying from about 4,000 to nearly 12,000 feet above the level of the sea. The plants are small shrubs or large forest trees, with evergreen leaves, and commonly showy flowers. They appear to require great moisture, and a mean temperature of about 62°. The cultivation of these plants has lately been commenced in India with every prospect of success. The barks of several species and varieties are extensively used in medicine, and are undoubtedly the most valuable drugs known. They are imported into this country under the names of *Cinchona*, *Perevian*, and *Jesuits' bark*. Twenty-six different varieties have been described by Pereira; and Woddell has enumerated no less than thirty-nine. The most important are *Lora*, pale or crown bark; *Catayza*, or yellow bark; and red bark. Those three are officinal in the British Pharmacopœia, and are the principal sources of the precious alkaloids *quinine* or *quinine*, *cinchonine*, and *guinidine*, which are all used in Medicine, and possess in an eminent degree tonic, febrifugal, and antiperiodic properties. The barks themselves have similar properties, and are, moreover, slightly astringent. The name *cinchona* was given to the genus by Linneus, in compliment to the Countess of Cinchon, whose husband was the viceroy of Peru. She had derived great benefit from the bark during her residence in South America; and on her return to Europe, in 1699, she brought with her several specimens. The native names, curiously enough, are very similar to the scientific one, being *quinguiña* and *quina-quina*. The medicinal use of the bark was first made known in Europe by the Jesuits. For a full account of the numerous varieties of cinchona bark found in commerce, see Roylo's "Manual of Materia Medica." The powder of the bark is given in doses of 10 to 60 grains, but in general it is better administered in one of the many forms in which it is prepared. The *infusion* is formed by infusing $\frac{1}{2}$ ounce of the powder for two hours in 10 fluid ounces of boiling distilled water, and then straining. Dose, 1 to 2 fluid ounces. The *liquid extract of yellow C.* (1 pound of the powder, 1 fluid ounce of rectified spirit, and a sufficiency of water, evaporated to 3 fluid ounces) is given in doses of $\frac{1}{2}$ to 30 minims. *Decoction*, boil for ten minutes $\frac{1}{4}$ ounce of the powder in 1 pint of distilled water, strain and add water to make up one pint of product. Dose, 1 to 2 fluid ounces. *Tincture of Yellow C.*, 4 ounces of powder to 1 pint of proof

Circulation of the Blood.

spirit. Dose, $\frac{1}{2}$ to 2 fluid drachms. (See QUININE.)

CINCHONIA, or *Cinchonina*, is an alkaloid resembling Quinine, but less energetic in its action, found in the different species of cinchona. It is seldom used medicinally, quinine being generally preferred.

CINERARIOUS, *sin'-er-re-shé-us* [Lat. *cineritum*, resembling ash], is a term applied to the exterior substance of the brain on account of its ashy appearance.

CINNAMOMUM, *sin-ná-mó'-mum* [Lat.], a gen. of plants belonging to the nat. ord. *Lauraceæ*, including many species remarkable for their aromatic properties. *C. zeylanicum*, the cinnamon-tree, a native of Ceylon, is extensively cultivated in that island, also on the Malabar coast, in Java and Cayenne, for the sake of the aromatic bark of the young branches, which form the *true cinnamon* of commerce. Cinnamon is much employed as a spice, and medicinally as a cordial, stimulant, carminative, astringent, antispasmodic agent, and as an adjunct to other medicines. It owes its properties to the presence of a volatile oil and tannin. The volatile oil is imported from Ceylon, where it is obtained from the rejected bark by distillation. It is known by the name of *oil of cinnamon*, and is used medicinally as a stimulant, and by cooks and confectioners for flavouring. *Cinnamon water* is prepared by taking 20 ounces of the bruised bark with 2 gallons of water and distilling 1 gallon. The *tincture of C.* is made of $\frac{1}{2}$ ounce of the bark in coarse powder and 1 pint of proof spirit, macerated for 48 hours, passed through a percolator, and then filtered. Dose $\frac{1}{2}$ to 2 fluid drachms. *C. cassia*, a native of China, yields the *cassia bark* of commerce, which possesses analogous properties to those of cinnamon. From this bark the fragrant *oil of cassia* is obtained. The *cassia buds* of commerce, which are now much used as a condiment, are said to be the flower-buds of this plant. Several other species of cinnamomum yield aromatic barks.

CINNAMON. (See CINNAMOMUM.)

CIRCULATION OF THE BLOOD, *nr'-ku-laf'-shun* [Lat. *circulus*, a circle], is the course of the blood through the body, from the heart to the capillaries, and from the capillaries back again to the heart. The several organs of circulation are the heart, arteries, veins, and capillaries. By the heart the blood is propelled through the arteries to all parts of the body. The capillaries are very minute vessels, connecting the extremities of the arteries with those of the veins; and by the veins the blood is returned again to the heart. The heart is composed of two distinct cavities, separated from each other by a partition or septum, and termed the right and left sides of the heart; the right being also termed the venous or pulmonic heart, the left the arterial or systemic heart. Each

Cissampelos

of those sides is subdivided into two cavities, the superior being termed the auricle, the inferior the ventricle. The blood which has been distributed by the arteries through the different parts of the body, passes from them, by means of the capillaries, into the veins. The veins from the lower part of the body empty themselves into the inferior vena cava, and those from the upper part into the superior vena cava, and both pour their contents into the right auricle. This contracts, and forces the blood into the right ventricle, which, in turn, forces it through the pulmonary artery to the lungs, where by the action of the in the veins blood is purified and changed into arterial. It is then conveyed by the left pulmonary veins into the left auricle, whence it passes into the left ventricle from which it is propelled into the aorta, and by thus means distributed to all parts of the body. The pulse which is felt in the arteries is caused by the action of the heart propelling the blood in waves through the body. The discovery of the circulation of the blood is due to Dr Harvey, afterwards physician to Charles I., the opinion previous to his time being that the blood circulated only in the veins, and that the arteries from being always full and empty iter deum et vacuus nothing but air, and hence the name.

Cissampelos, *Gr. κισσαπέλος* [Gr. κισσός, a vine], a gen. of plants belonging to the nat. ord. *Menispermaceæ*. The root of *C. Pareva*, a climbing plant indigenous in Brazil, is an article of our *Materia Medica*, and is commonly known as *Pareva brava*. It possesses bitter, tonic, and diuretic properties which are chiefly due to the presence of an uncrystallizable alkaloid named *cissampeline* or *clouine*. The bark is greyish brown, longitudinally wrinkled, & used transversely by annular elevations, interior woody, yellowish grey, porous, with well marked often inconspicuous concentric rings, and medullary rays. Taste it first sweetish and aromatic, afterwards intensely bitter. The decoction is formed of 1*oz.* ounce of the root sliced and boiled for 15 minutes in a pint of distilled water and afterward strained. Dose 1*oz.* to fluid ounces. The extract is formed by decocting for 24 hours 1 pound of the root in a wine powder with a pint of boiling distilled water percolating and adding more boiling water until all of the liquid has passed, then evaporating the liquor until the extract is of a consistence suitable for making pills. Dose 10*gr.* to grain. The liquid extract is formed by adding 3 fluid ounces of rectified spirit to the above. Dose $\frac{1}{2}$ to 2 fluid drachms.

Cissackia, *Gr. κισσάκεια* [Gr. κισσός, a box or capsule], the Rock rose fam. a nat. ord. of dicotyledonous plants in the sub class *Rhamnifloræ*, chiefly natives of the south of Europe and north of Africa. They are shrubs or herbs. From species of the typical genus

Citrus.

Citrus, a fragrant resinous substance, called *Ladanum*, is obtained in the Levant. This is used medicinally as an expectorant and emmenagogue, and is much esteemed by the Turks as a perfume.

Citric Acid, *nitr. citric* is found principally in the lemon, lime, orange, and other members of the *francetaceæ* fam. It also occurs in other acid fruits such as the gooseberry, raspberry, strawberry, and tamarind. It is procured by neutralizing lemon or lime juice with chalk and decomposing the insoluble citrate thus formed with sulphuric acid. Citric acid is very soluble in water. It crystallizes in transparent colourless rhombic prisms which have an agreeable acid taste. Combinations of citric acid with iron and ammonia are much used in medicine, and it is also used in the preparation of effervescent druggs. The antiseptic properties of lemon juice are due to the presence of citric acid.

CITRINE OINTMENT, *Ingredient Citrumen et Hydrargyrum Nitris* (the Ointment of Nitrate of Mercury), is formed of 4 ounces by weight of mercury dissolved in 1*oz.* fluid ounces of nitric acid and a like 1*oz.* fluid ounces of prepared and melted in 1*oz.* fluid ounces of olive oil. This is a valuable stimulant application particularly in chromophthalmia when it is applied to the eyelids. It is also used in varicose ulcers of the skin, as well as to foul and violent ulcers.

Citrus, *n. trax* [said to be from the town *Citron* in Judea], in Bot., a gen. of plants belonging to the nat. ord. *Anacardiaceæ*. The different species and varieties of this genus yield the fruits known under the names of orange, lemon, lime, shaddock, pomelo, moon, forli, luscum, kumquat and citron. The species (*A. citrina*) and its varieties, produce all the various descriptions of sweet oranges the most important of which are the St Michael's, the blood red, the Maltzæ, and the common oranges. (*Bigaradia* or *bulgaria*) yields the bitter or Seville orange. By distilling the rind of the ripe sweet orange with water a fragrant oil named *essential oil of sweet orange* is obtained. The rind itself is used in medicine as an aromatic stimulant and tonic. The juice of the fruit form a refreshing beverage, and in medicine a valuable refrigerant. The bitter orange is chiefly used for making marmalade. Its rind yields a volatile oil called *essential oil of bitter orange*, and is used medicinally and for making candied orange peel. *C. Limonum* and its varieties produce the fruits called lemons, the chief varieties of which are the wax-lemon, the imperial lemon, and the Gaeta lemon. Both the rind and juice are employed in medicine, the former as an aromatic and stomachatic, and the latter for its refrigerant and anti-acid properties. The juice contains a large quantity of citric acid and is extensively used for flavouring, and to form the refresh-

Cladonia.

ing beverage called lemonade. The rind contains a large quantity of essential oil, which is obtained from it by expression or by distillation, and is known as the *essential oil, or essence of lemon*. This oil is principally used as a flavouring agent in confectionery and in medicine, and occasionally in perfumery. *C. Limetta* is the source of the lime. This fruit is generally imported into this country in a preserved state, and in that condition it forms a most agreeable dessert. Its juice is also imported, and largely employed, with that of the lemon in the preparation of citric acid. *C. medica* yields the fruit called the citron, which is supposed to be the Hebrew *tayauach* translated in the English version of the Old Testament "apple." The rind of the citron is imported in a preserved state, and is used in confectionery. The pulp is less acid and juicy than that of the lemon. The citron, lime and lemon are distinct fruits from the orange by their adherent rind, their more longitudinal form and by the occurrence of a more or less prominent protuberance at the apex.

CLADONIA, *kl'dō-nē'*, in Bot., a gen. of lichens. *C. rangiferina* is the reindeer moss so termed from constituting the principal food of the reindeer. (*Hydalaria*) is a common term'd cup moss, it has been employed as a remedy in whooping-cough.

CLARET, *klār'et* [Fr. claret, from clair clair], a name commonly used in England to denote the light red wine of France. Claret, in France signifies those wines which are red or rose coloured, but the word as used by us to denote every description of light red wine, is unknown in France.

CLEARS, KIDS [Lat. *clarus*] in Bot., a group of orders possessing some important structural characters in common. In the system adopted throughout this work we have the classes *Monocotyledonea*, *Dicotyledonea*, and *Acotyledonea*, which present certain distinctive characters in their embryos, from which they derive their names, and they present moreover, other important anatomical differences. (See BOTANY.)

CLAVICLE, or COLLAR-BONE, *klav'ikyul* [Lat. *clavula*, from *clavis*, a key], is the bone which extends horizontally from the sternum to the scapula, and serves to keep the shoulders apart, that the arms may have a freer and wider range of motion. It takes its name from its resemblance to the ancient Roman key and is curved somewhat in the form of an italic 'I'. Its sternal end is thick, strong, and expanded, while the acromial end is broad and flattened, and presents an oblong surface, in order to articulate with the acromion process of the scapula. (See ANATOMY.)

CLIMACTERIC, *klīm'ak-tēr'ēk* [Lat. *climacterius annus*, from *climax*, a ladder or steps], denotes a critical year or period in a man's

Clinic.

life, wherein, according to astrologers, there is some notable alteration to happen in the body, and the person will be exposed to great danger of death. The idea of climacteries is very ancient. According to some, every seventh year of a man's life is a climacteric year, certain important changes then taking place in the body. The ages of 63 and 84 are regarded as the *grand climacteries*, the changes being then greater, and the danger attending these periods much increased. Others allow the term climacteric only to the product of 7 multiplied by odd numbers, 24, 3, 5, 7, 9, &c. Some, again, consider every ninth year a climacteric.

CLIMATE, *klimat*, is derived from the Græc word *clima*, signifying inclination, but which was also applied to certain zones on the earth's surface, from their supposed inclination to the pole. In its present and most general acceptation, the word *climate* may be said to include all those atmospheric conditions and changes that sensibly affect our organs, such as heat, moisture, winds, electricity &c. It is to the varieties in the climate of different places that we are indebted for the great variety that exists in the vegetation and animal kingdom. Every species of plant has certain climatic boundaries, some much more extended than others, within which alone it will flourish. Animals, too, have their climatic bounds. To man alone is it given to subsist in any climate. Even him, however, different climates affect very differently—some being favourable to health, others tending to disease. As in the case of plants and animals, it is found that the physical and moral characters of disease vary with the climate, and that particular districts have their geographical seats and limits being regulated in their distribution according to almost every temperature and moisture, the density and electricity of the air, the nature of the soil and the character of the vegetation. Each race of mankind has its prescribed salubrious limits, and deviates in proportion as it departs therefrom. The study of the effects of different climates upon different constitutions and their curative effects in different diseases, forms an important branch of medicine. By change of climate the patient is exposed to new atmospheric, celestial, and telluric influences, varying in all conceivable varieties and modes of association from those to which he has been accustomed. There are few diseases that may not be influenced by climate, and hence the necessity to the physician of making himself acquainted with the atmospheric conditions of different localities. (See Sir James Clark's "On Climate," Atkins' "Science and Practise of Medicine," 11th edition, vol. II.)

CLINIC, OR CLINICAL, *klīn'ik, klīn'ik-al* [Gr. *klinikos*, from *klinos*, a bed], is applied to the observation and treatment of diseases at the bedside of the sick, and hence clinical

Clothing.

lectures are such as are given at the bedside of the patient or from notes and observations made at the bedside. This is the most valuable mode of instructing in the art of medicine; the students are taken to the bedside of the patients in a public hospital and there practically instructed in the various phenomena of disease taught to observe the characteristics of each individual case, and to study the effects of the various modes of treatment. In modern times at least, clinical medicine was entirely neglected till about the middle of the 17th century, and it was not till the beginning of the 18th that it began, by Boenhave, to be a systematic ally carried out. Since that time it has come into general use, and now every good medical school has an establishment for clinical medicine in connection with it.

CLOTHING—Health and comfort depend in no small degree upon clothing particularly in a variable climate like ours. Care should be taken that all varieties of dress be worn so as not to press upon the body parts or to impede the action of important organs. It is particularly necessary to attend to this in regard to children. In winter, the clothing should be warm and suited to the season of the year. Children and old people require to be much more warmly clad than such as are in the prime of life. It is a great mistake to clothe children too thickly or to expose them to cold with the view of making them hardy. In this way the seeds of disease are frequently laid. John Hunter was wont to say that the best receipt for rearing healthy children was "plenty of milk, plenty of sleep, and plenty of flannel." Such persons as are delicate or are subject to cold should wear flannel next the skin, which should be frequently changed. The feet should be kept warm and free from damp.

(*Lover* (*See* *HYDROcephalus*))

CLUB FOOT is a distortion of the foot, occasioned by the greater contractions of some muscles than others, by which means the foot is drawn out of its natural position, it may be inwards or outwards with the elevation of the heel and depression of the toes, or the depression of the heel and elevation of the toes and fore part of the foot. Such deformities are usually congenital, but sometimes they may arise from some disordered state of the system or be occasioned by convulsions. When recent it is of importance to ascertain the cause and to direct attention to its removal. If owing to a sickness or irritation we must strive to strengthen the muscles and to soothe the nerves. Attention to the general health, properly directed exercise of the part, and, if necessary, special appliances to retain the limb in position, will go far in most cases, to effect a cure. In cases where these means are ineffectual, a careful subcutaneous division of the contracted tendons rarely fails to effect a cure.

Cochineal

COBLISTER, *blis-ter* [Gr. *blazo*, I wash out] is a name given to certain medicines administered in a liquid form, by means of an injecting syringe, by the rectum, for the purpose of procuring evacuation of the bowels, or otherwise affecting the intestines or the system generally. In cases of lock-jaw, &c. when nutriment cannot be conveyed by the throat, it is sometimes administered in this way. The nature of clysters depends upon the object they are designed to effect, and they may be emollient, astringent, purgative, or aperient. Clysters are sometimes used in order to relieve constipation, and for this purpose tepid water or gruel is commonly employed. The frequent use of this medicine however (except by medical advice), is very injurious as it impairs the tone of the alimentary canal, and unites it in the performance of its functions. For the purpose of nutrition, beef tea or milk is commonly employed and administered in small quantities. Medicines introduced into the rectum in a solid form are called suppositories.

COCKLEBERRY INDICTS, *lok'le ber'ri in'deits* [*Lat. Indian berry*] is the fruit of the *Thunbergia paniculata* (which see). It has some resemblance to the bayberry and is imported into this country from the East Indies. It is chiefly used for adulterating cheap beer, and it is really wonderful in how many ways it is fitted to disguise a liquor prepared from insufficient quantities of malt and hops; thus it imparts to the sophisticated liquor an intensely bitter taste, a darkness of colour and a fulness of body, while it adds to its exhilarating qualities. It is scarcely necessary to state that the cockleberry is never employed by respectable brewers. Its use has been forbidden by act of parliament. In large doses it is poisonous to all animals and it has long been used by poachers for stupefying fish and game. In medicine it has been employed in the form of an ointment as an external remedy for certain skin diseases. It owes its active properties to a very poisonous crystalline alkaloid called *glaucotoin*.

COCKTAIL is the name of a muscle of the Os coxae situated within the pelvis.

COCCUS OR OSCOCCEA [*kol's us* or *Gr. kokkos*, a cuckoo] in Ainst. is the name given to the lower end of the spine, from its supposed resemblance to a cuckoo's beak. (*See Spine*)

COCHINEAL, *lotngh'-in esl* [*Sp. cochinal*] — This beautiful dye is obtained from the *Coccus cacti*, a small insect infesting a tribe of cacti growing in Honduras and other parts of South America. Analyses of cochineal have yielded chitine, fatty matter, phosphates of lime and potash, and the colouring matter carmine. In Medicine, cochineal has been employed as an antispasmodic, but it is chiefly used as a colour.

Cochlea.

ing agent for other ingredients, and seems to have little power of its own. Tincture of cochineal is formed by macerating for 7 days in a close vessel, 2½ ounces of the powder on one pint of proof spirit, and then straining and filtering.

(*Cochlea.* (*See Ear.*))

COCHLEA, *kok-le-air-s-a* [Lat. *cochlearia*, a spoon], in Bot., a gen. of plants, so named from the leaves being spoon-shaped, belonging to the nat. ord. *Cruriflorae*. The species *C. officinalis* is the common survy-grass, an indigenous annual found in muddy places near the seashore. It has white flowers, which blossom in April and May. When rubbed, it evolves a pungent odour, and its taste is acrid and penetrating. It has long been esteemed for its antiscorbutic properties, and was formerly admitted into the Dublin Pharmacopœia.

COCKLE, *kok-l* [*Carilium*], a gen. of Mollusca, belonging to the *Cardiaceæ*. There are numerous species of this animal, some two hundred of which are known. The common cockle is the most abundant, and large quantities of this shell-fish are found on the coasts of Great Britain, principally on muddy and sandy banks. By some it is considered a highly nutritious article of food; and indeed, the enormous demand for it would seem to justify such an opinion.

(*Cocca*, or *Cacao*. (*See Thesaurus.*))

Cocca, or *Cocoa-nut*. (*See Cocos.*)

COCOS, *ko'-kos* [Gr. *kokklos*, a kernel], a gen. of palms. *C. nucifera*, the coco or cocoa-nut palm, is perhaps the most useful member of that great family, which may be said to yield flour, sugar, oil, wax, wine, thread, utensils, timber for habitations, and leaves for thatching. Sugar, called *jaggery*, is largely obtained from the juice which flows out when its spathes and spadix are injured. Toddy and arrack are produced by the fermentation of this juice. The albumen of the seeds (cocoa-nuts) and the liquid within this (cocoa-nut milk) are important articles of food in many tropical regions. The coco-nut is also largely consumed in this country. From the albumen, or edible portion, the concrete oil known as *cocoanut oil*, or *cocoanut butter*, is obtained.

COD LIVER OIL, *Oleum Morrhœiæ*, is extracted from the fresh liver of the cod, by the application of a heat not exceeding 18°. There are various modes of extracting the oil. That recommended is to select the best livers fresh, clean and slice them, and then expose them to the above heat until all the oil is drained from them, which is then filtered and cooled to a temperature under 5°, so as to congeal the more solid fat. There are three kinds of oil, the pale-yellow, pale-brown, and dark-brown, the last being the most pure. In addition to the usual components of fish oils, it appears to contain a compound of acetic acid with glycerine, various constituents of the bile, and

Coffea.

minute portions of iodine, bromine, and phosphorus. This has, of late years, been recognized as a valuable medicinal agent, and has come largely into use. It is used in consumption, and scrofulous affections, in chronic rheumatism and gout, and in various diseases of the skin. It is given in doses of 1 to 8 fluid drachms three times a day, and continued for some time. It is best given immediately after a meal. To obviate the nausea which it sometimes occasions, it may be floated on milk, or some aromatic water, orange wine, or the like.

(*Circum.* (*See Intestines.*)))

COFFEA, *ko'-fe-a*, a gen. of plants belonging to the nat. ord. *Cinchonaceæ*. The species *C. arabica* is the coffee-plant, or *quinta* of the Arabs, the seeds of which, when roasted and ground, are used to furnish the daily and most cherished drink of probably more than a hundred millions of human beings. The plant is said to be a native of Arabia Felix and Southern Abyssinia; but it has been carried to various countries within the tropics, and, at the present time, is cultivated wherever the climate is suitable. In some countries it seldom attains a greater height than eight or ten feet; but in others, its average height, when full grown, is from fifteen to twenty feet. The roasted seed or bean has been used to form a beverage in Abyssinia from time immemorial. From Abyssinia it was introduced into Arabia in the beginning of the 15th century, and about the middle of the following century it began to be used in Constantinople, where, in spite of the violent opposition of the priests, it soon became an article of general consumption. In 1652 the first London coffee-house was opened in George Yard, Lombard Street, by a Greek, named Pasqua; and twenty years after the first in France was established at Marscuillot. Since that time, both the culture and consumption of coffee have continually extended. About forty millions of pounds are annually consumed in this country alone, and the consumption for the whole world has been estimated at about 600 millions of pounds. Coffee owes its valuable properties chiefly to the presence of an alkaloid called *caffin*, and a volatile oil. It is remarkable that tea should contain precisely the same principle, *theine* and *caffin* being identical. The sensible properties and effects of coffee, like those of tea, are too well known to require to be stated in detail. It exhilarates, arouses, and keeps awake; it counteracts the stupor occasioned by disease, by fatigue, or by opium; it allays hunger to a certain extent; gives to the weary increased strength and vigour, and imparts a feeling of comfort and repose. Its physiological effects upon the system, so far as they have been investigated, appear to be, that, while it makes the brain more active, it soothes the body generally, makes the urine and waste of matter

Coffee.

blower, and the demand for food in consequence less.

Coffea (See COFFEE.)

Cochlearia, *koh'-leer-ee-uh* [after Colchis, its native country], a gen. of plants belonging to the nat. ord. *Melanthiaceae*. The most important species is *C. sativa* the common meadow-saffron, an annualous perennial growing in abundance in the pastures of Herefordshire, Worcestershire, Gloucester-shire, and other counties. It bears during the months of August and September, its flowers being crocus-like, and of a purple colour. This plant offers a strange contrast to most others in the mode of producing flowers and fruit. The flowers appear during the autumnal months in July, rising from the ground without any leaves; and, when they fade, nothing further is seen of the plant until the following spring, when tufts of leaves mark their appearance, enclosing the seed vessel or capsule, which ripens about May harvest. Both the roots and stems of this plant are employed medicinally in root and huncus. They stimulate the secretions, acting as a cathartic diuretic and diaphoretic and at the same time producing a diuretic and sudorific effect. The stems are collected about the end of June, stripped of their coats, sliced transversely, and dried at a temperature not exceeding 150°. Dose, in powder, 2 to 5 grains; the extract is formed by crushing, the fleshly stems, pressing out the juice, allowing the incisions to subside, then heating the extract up to 120°, and straining and evaporating at a temperature not exceeding 100°, until of a suitable consistency for forming pills. Dose, 1/4 to 1 drachm. The seeds of colchicum are about the size of what are termed seeds very hard and of a reddish brown colour. The tincture is made by macerating for 48 hours, 1 ounce of the seeds bruised in a pint of proof spirit. Dose, 10 to 30 minims. In nephritis doses of colchicum acts as a urine-tracing poison. The oil of colchicum is rich in nitric acid for gout, &c. See *COLCHICUM*, over the properties of colchicum.

Colic (S. CATERARIA, HCAT)

Colic, *kol'-ik* [Gr. *kolon*, the colon], is a name given to several diseases which are characterized by severe pain of the bowels, with distension or flatulence, but without looseness or diarrhoea. Medical men distinguish no fewer than seven different kinds of this complaint, as, 1 *Spasmodic*, in which the principal symptom is a sharp and spasmodic pain about the navel, 2 *Stercor-*

Colocynth.

aceous, when the pain is accompanied with constipation of the bowels; 3 *Accidental*, when occasioned by indigestible food, or by solid matter in the intestines; 4 *Bilious*, when accompanied with vomiting of bile, or with obstinate costiveness; 5 *Flatulent*, when it arises from flatulence in the bowels; 6 *Inflammatory* when accompanied with heat and inflammation; 7 *The Lead, Painter's, or Denonvillere's colic*, the dry belly ache which is attributed to the poison of lead. Among the most frequent causes of this disease may be named poisons or unwholesome substances, long-undigested food, redundancy of vitiated bile, intemperance with worms, &c. The treatment will in each case depend very much upon the cause; generally, the first object is to procure an evacuation of the bowels by mild and unirritating apertients, as castor oil, or rhubarb. Opium may be required to in order to allay the spasms, and the warm bath and fomentations are often of great service. It is usually necessary to persist in a course of mild apertients for some time, and all irritating substances and food are to be avoided.

Colitis, *kol'-i-tis* [Lat. *collegere* from *coll* = I shrink down] is a wasting or shrinking of the body, or of a part of it, or a sudden and extreme depression of its strength and energies.

(COLLAGEN) (See COLLAGEN.)

Collodion, *ko'-lo-de-on* [fr. Gr. *kolli*, glue] is a solution of gelatin in a mixture of ether and alcohol. When this solution is exposed to the air, the ether and alcohol evaporate, leaving behind a thin tough pellicle. It is used extensively in medicine for forming an artificial skin on a wounded surface, and in photography. Collodion is made by mixing 6 fluid ounces of gelatin, 120 grains of Canada balsam and 1 fluid drachm of castor oil, and applied to surfaces from not being liable to split or crack with the movements of the limb.

Collodium, *kol'-u-m* [Gr. *kollurion*], was formerly applied to any medicament employed to a firm effusion, but it is now confined to topical remedies for the disorders of the eyes—an eye salve, or eyewash. Collum are of various kinds, *vitriolic*, *nitreous*, *sulphuric*, &c. Solutions of sulphate of zinc, &c copper, a tincture of alum, or tannin, iodide of zinc, or typical lotions, containing opium, henbane, or belladonna, *escharotic*, &c. nitrate of silver in solution.

Colocynth, *kol'-o-synth* [Gr. *kolokynthas*]. The bitter cucumber or bitter apple, a well-known drastic hydragogue cathartie. It is the fruit of the *Citrullus colocynthus*, a plant belonging to the nat. ord. *Cucurbitaceae*, and supposed to be the "wild vine" of the Old Testament. Two kinds of colocynth are known in commerce, namely, *Turkey*, or *peeled colocynth* which is imported from the Levant, the north of Africa, and Spain, and

Colon.

Mogadore, or unpeeled coloynith, which comes from Mogadore. The former is the best, and is generally employed in medicine, the latter being principally used by chemists in their show bottles. The seeds possess the purgative property to a slight extent but the pulp is by far the most active part of the fruit. In large doses, coloynith is an irritant poison. It owes its properties to a peculiar bitter principle, which has been named *colocynthin*. The pulp is light spongy, white or yellowish white in colour without odour, but intensely bitter in taste. Dose of powder, 2 to 8 grains. The compound *elixir* is formed by macerating, for four days, 6 ounces of the pulp in 1 gallon of proof spirit, pressing out the tincture, and in filling off the spirit, then adding 12 ounces of sotroctine, 12 ozs. 4 ounces of resin of ammonium, 3 ounces of hand soap in powder and evaporating until of a consistence for making pills, adding 1 ounce of cardamom seeds. Dose, 3 to 6 grains. The *compound pill* is made by mixing 1 ounce of the pulp, in powder, 2 ounces of h. & Bar botanical wax and ammonium in powder, ½ ounce of sulphate of potash, in powder, with a fluid drachm of oil of cloves, adding a sufficient quantity of distilled water to form a mass of the proper consistence. Dose, 5 to 10 grains. The *C. and Hydrocyanic Pill* is made of 2 ounces of compound pill of C., and 1 ounce of extract of hydrocyanus. Dose, 5 to 10 grains.

Colon, *ko'lon* [Gr. *kolon*, a member, or limb] in Anat., is the largest of the intestines, or, rather, the largest division of the intestinal canal. This canal is divided into the small and great intestine, the former consisting of the duodenum, jejunum, and ileum, the latter of the cecum, colon, and rectum. The first intestine commences in the right iliac fossa in a dilatation of considerable size called the cecum. The colon ascends through the right lumbar and hypochondriac regions to the under surface of the liver, passes transversely across the abdomen on the confines of the epigastric and umbilical region to the left hypochondriac region, descends through the left lumbar region to the left iliac fossa where it becomes convoluted, and forms the sigmoid flexure, from which the rectum extends to the anus. It is thus divided into four parts,—the ascending, transverse, descending, and the sigmoid flexure. The colon in man, averages from 4 to 5 feet in length, and about 2 inches in diameter, being about a fourth part as long, and twice as wide as the small intestine. The canal is not smooth and uniform, as in the small intestine, but bulges out between the bands of muscular fibre into various prominences, more or less regular in their form, in which the feces lodge for a time, and become deprived of much of their moisture as they are rolled onwards by the peristaltic action

Concussion.

to the rectum and anus. The colon is developed in the serous membrane called the peritoneum, which forms the external covering of all the abdominal viscera. (See INTESTINES.)

COLTSFOOT (See TUBERCULOSIS.)

Coma, *ko'ma* [Gr. *koma*, from *ko*, I be down], in Path., is used to denote a diseased condition of the brain, manifesting itself in a state of insensibility resembling sleep, from which the patient cannot be aroused, or only in a very partial degree. Coma may result from congestion or hemorrhage in the brain or from any abnormal pressure on that organ, from the agency of narcotics, ions or alcohol, from exhaustion arising from the loss of blood, or from the action of the blood of various morbid products generated within the system. Slight coma differs but little from profound sleep, but in complete coma the patient is entirely shut off from the external world, and is quite dead to all external impressions. Medical writers distinguish several varieties of comas, the chief of which are the *coma vigil* and the *coma amniontum*. The former is characterized by a constant disposition to sleep, without falling into a quiet, sound, or natural slumber, accompanied by delirium, muttering, and a raving, the latter is marked by prolonged sleep, without the power of awaking spontaneously, and if roused, almost immediately sinking into the same state. Any of the forms of coma may come on suddenly, and terminate suddenly in death; or it may come on gradually, and be of short duration, sense and voluntary motion is still returning. When its accession is slow, it often commences with drowsiness or headache. The causes and characteristics being so obvious, its treatment must also necessarily vary greatly, the object is by means of stimulants and counter-irritants to rouse the patient to consciousness. (See ALOPHLEX.)

COMBELL (See SIMPHISTUM.)

COMMISSURE, *kom'i-shur* [Lat. *communis*, a joining together], is a joint or seam, the place where two bodies or parts of a body meet and unite. For the Commissures of the Brain, see BRAIN.

COMPARATIVE ANATOMY (See ANATOMY.)

COMPRESS [Lat. *comprido*, I press together] is formed of soft linen, flax, or other substance folded together into a sort of pad, and applied to a part where no pressure is required. The "wet compress" consists of two or three folds of thin flannel or calico wrung out in cold, tepid, or warm water, and laid upon the part and covered with gutta percha or oil silk.

CONCRETIONS, *kon-kre'shuns*, are hard substances that occasionally make their appearance in different parts of the human body. (See CALCULUS.)

CONCUSSION, *kon-kus'* skin [Lat. *concuso*, a shaking together], is applied to a violent

Condy's Disinfecting Fluid

commotion or shock communicated to the brain, or the whole nervous system, by collision of the body with some external object. **Symptoms**—In its slightest form, a stunning sensation is merely communicated, which passes away in a few minutes, in its severest form, death rapidly ensues. In the severer cases the patient becomes immediately pale and insensible, the breathing sometimes natural, but frequently slow and feeble, the pupil rather contracted, the pulse usually slow and weak, but sometimes natural; the extremities become cold, the sensations are suspended, and there is frequently nausea and vomiting. **Treatment**—In the treatment of concussion great caution is necessary. The patient at first should be kept warm in bed, with bottles of hot water, hot bricks, &c., till consciousness is restored, when wine or other stimulants may be cautiously administered. If he seems to be sinking, stimulants should at once be had in course to, but so long as he is in a stationary, no active means should be employed. Afterwards bodily rest and quiet cessation from all mental occupation, a mild unstimulating diet with gentle bitter aperients are the means to be adopted in restoring the patient. When there is also an invasion of blood upon the brain the symptoms will take the form of apoplexy. (*See APOPLEXY.*) The symptoms in the two cases, however, are so similar that it is frequently a very difficult matter to distinguish them.

CONDY'S DISINFECTING LIQUID (*See PAR-MANGANESE ACID*)

CONFECTION, or CONFECTIO [Lat. *conficio*, I make up] in general means anything made up with sugar. In pharmacy confections are composed of certain fresh vegetable matters with sugar, honey, or syrup, beat into a uniform mass. They are designed to preserve, as nearly as possible, unaltered, the virtues or properties of the vegetable substances, or as a palatable mode of conveying dangerous medicines. They possess however, little activity. The different confections in common use will be found noticed under their special heads. (*See CASSIA, OPIUM, SCAMMONY, &c.*)

CONGESTION, *kon-jesh-un* [Lat. *congestio*, from *congero*, I am full] is a term employed to denote an unnatural accumulation of blood in the capillary vessels of any part, accompanied with disordered functions of the organ in which such accumulation takes place. The organs most liable to congestion are the brain, lungs and liver, but other parts are also subject to it. It is usual to distinguish two kinds of congestion,—a passive and an active. In passive or simple congestion there is merely an accumulation of blood arising from distension and diminished vital energy in the capillaries, in active congestion, on the other hand, the blood-vessels are in a state of increased activity, and a preternatural quantity of blood is

Constipation.

determined to them. Anything may be the cause of congestion which diminishes the vital energy of the capillaries, or which increases the quantity of blood which they contain. (*See INFLAMMATION*)

CONIUM, ko'ne-um, the Hemlock, a genus of plants belonging to the nat ord. *Umbelliferæ*. The most important species is *C. maculatum*, spotted Hemlock, an indigenous plant which is extensively employed in medicine to relieve pain, relax spasm, and compose general nervous irritation. It is also used as an astringent and deobstruent in glandular and other swellings. It owes its properties chiefly to the presence of a colourless oily liquid, which is penetrating in taste like odour, to which the name of *Cina* has been given. In improper doses, hemlock is a powerful poison, and many fatal accidents have arisen from its having been mistaken for harmless, unoffensive plants; it may, however, be readily distinguished by its botanical characters. The stem is large, round and smooth with spots upon it of a purplish-black colour, the leaves are dark green and shining, the general involucle consists of from three to seven leaflets, the partial involucle of three leaflets, the fruit has undulated, crenated primary ridges, and contains no *ostra*, and the whole herb, when bruised, evolves a disagreeable smell, which has been likened by some to that of mice, and by others to that of raw urine. No chemical antidote is known for hemlock. The leaves and young branches are to be gathered when the fruit begins to form, and the leaves separated from the branches, and carefully dried. Dose in powder, 2 to 8 grains. The juice *Secus Cinae* is obtained by taking 7 pounds of the fresh leaves, bruising them in a mortar and pressing out the juice then 3 or 4 ½ measures of juice adding one of rectified spirit, set aside for 7 days, and then filter. Dose 1 to 2 fluid drachms. The extract is formed from the fresh leaves and young branches, and is given in doses of 2 to 6 grains. Hemlock-poultice is formed by mixing 1 ounce of the leaf in powder, and 3 ounces of linsed meal, and gradually adding them to 10 fluid ounces of boiling water constantly stirred. The tincture is formed from the dried ripe fruit, bruised and macerated, ½ ounces in 1 pint of proof spirit for 48 hours in a closed vessel, then percolated and filtered. Dose, 20 to 60 minims.

CONSTIPATION, kon-stip-a-shun [Lat. *constipatio*, from *constigo*, I crowd together], in Med., is a torpidity or sluggishness of the bowels, occasioned by an excessive action of the absorbents of the bowels, or defective secretion of the juices of the intestines, by which the faeces become hardened, or by an impaired peristaltic action of the intestines. (*See Digestion*) It arises most frequently from a deficiency or vitiated secretion of the

Consumption.

bile, which is the natural stimulus of the bowels. Sedentary habits predispose to constipation, as does also the use of certain kinds of food. When severe and obstinate, it gives rise to inflammation of the bowels, and may soon prove fatal. *Treatment*—The treatment consists in moving the bowels by means of purgatives, and then restoring the natural state of the system by means of tonics, active exercise in the open air, sea-bathing, and the use of food of a laxative nature, as brown bread, green vegetables, &c. In cases of muscular or nervous debility of the intestines, galvanism will be found useful. The frequent use of purgatives in overcoming constipation is very reprehensible. Much benefit will be experienced from regularly soliciting the bowels at a particular time over every day.

CONSUMPTION (See PHTHISIS).

CONTAGION, *kon-ta-jun* [coagulo, from *con*, and *tango*, I touch], in Med. ought, properly speaking, to be confined to the communication of disease to a healthy body by actual contact with the sick, or with the palpable matter from their bodies, and infection to be applied where disease is communicated through the medium of the atmosphere, or by means of other intermediate substances, called *fomites*. This distinction, however, is frequently lost sight of, and the term contagion applied to all cases in which the disease is conveyed to the person of the recipient by particles of matter proceeding from the person of the sick, whether those particles are in a solid or a gaseous form, whether they are impelled by direct contact of the two bodies, or by being wafted through the air, or carried upon articles of clothing. There are two kinds of contagious disease: (1) Those that can only be communicated by direct contact, as itch, syphilis, and (2) those which are capable of being produced either by direct contact or without it, as small pox, typhus fever, &c. Some contagious diseases seem to flog some radius or changes upon the system, so that it is not again liable to attack from the same disease, as small pox, and some diseases, that do not generally manifest any contagious disposition do occasionally, under unfavourable circumstances, assume a malignant and contagious form. The term contagion is also applied to a poisonous inmate, by means of which the disease is communicated. In this latter sense, it is a morbid matter *in se*, which, on entering the blood, produces a definite train of morbid phenomena, and communicates to the blood the property of generating a similar poison capable of producing precisely the same disease. (See DISINFECTANTS.)

CONTARVERBA. (See DORSITIA.)

CONVOLVULUS, *kon-vol'-ve-lus* the Bindweed, a gen. of plants, the type of the nat. ord. *Convolvulaceæ*. It is characterized by

Convulsions.

a bell-shaped corolla, with five prominent points and five shallow lobes. Three species are natives of Britain, namely, *C. sepium*, *S. nemorale*, and *Solidanella* *C. Scammonea*, a native of Asia Minor, is a valuable medicinal plant, being the source of the purgative gum resin called scammony. This is obtained from the fresh root, by cutting the top obliquely off, and allowing the milky juice which exudes to be collected in shells or other vessels. Scammony is a drastic purgative somewhat of the nature of jalap but less active. Dose, 5 to 10 grains. The resin of scammony is obtained by digging the root in coarse powder, in a covered vessel with red hot spirit. Then pass through a percolator, adding more spirit until the root is exhausted add water, and distil off the spirit, and when cool pour off the supernatant fluid from the resin. Dose, 3 to 8 grains. The *composition* consists of 3 ounces of scammony in fine powder, 3 fluid ounces of syrup, $\frac{1}{2}$ ounce each of clarified honey and ginger in fine powder, 1 fluid drachm of oil of caraway, and $\frac{1}{2}$ fluid drachm of cloves. Dose, 10 to 30 grains. The *compound powder* contains 4 ounces of scammony in powder, 3 ounces of jalap in powder, and 1 ounce of ginger in powder. Dose, 10 to 20 grains.

Convulsions, *kon-vul'shuns* [Lat. *convulsa*, I pull together], a violent and involuntary contraction of the muscles of the human body, generally with corresponding relaxations, but sometimes with rigidity and tension. *Character and symptoms*—The fits vary much in extent and violence, sometimes attacking the whole body, at other times only particular parts, sometimes lasting only for a few minutes, at other times continuing for hours. When the affected muscles are rigid and tense, and their contraction persistent or not quickly alternating with relaxation, the convolution or spasm is said to be *tonic*; when contractions and relaxations rapidly alternate, it is called *clonic*; when slight contractions rapidly alternate with relaxations, it is called *tritonus*. Sometimes the attack is sudden and without any warning, but generally it is preceded by certain premonitory signs, such as giddiness, dimness of vision, giddiness of the extremities, tremblings, and a cold air creeping up the back or up a limb. During the fit the teeth gnash and often bite the tongue, the mouth foams, the eyes roll wildly about, and the whole face is distorted. The muscular force exerted is sometimes so great as to overcome the strength of several attendants. Great languor commonly succeeds, attended frequently with headache and giddiness, but these generally pass quickly away. In partial convulsions the mind is rarely affected, but when general, it is in most cases lost during the fit. *Causes and Treatment*—The causes of convulsions are many

Copaiba.

and varied, and their treatment must in each case depend very much upon the cause. In children the common cause is irritation of the bowels, arising from gross and indigestible foods, teething or worms. These are to be treated by the administration of appropriate remedies and purgatives, and the lancing of the gums. In paroxysmal convulsions bleeding and emetics are the usual remedies and in cases where they arise from violent affections of the mind, the exciting causes must be strenuously avoided. During the fit the patient should be immediately surrounded as much as possible by fresh cool air, his face, neck, and bosom freely exposed to it and every thing tight about the body loosened. For children a warm bath is strongly recommended. The after treatment consists in the judicious use of tonics and nervous stimulants, with cold bathing, regular exercise in the open air, plain but nourishing diet, and attention to the state of the bowel.

COPAIBA (See COPAIBA.)

Copáiba le pí fesá [from *copaiba*, the Brazilian name, and *Lat. f.*, I bear] a son of plants belonging to the nat. ord. *Juguminoe*, sub. ord. *Leguminosae*. The species are natives of tropical America, and prevail yield the valuable resin which is used in medicine under the name of *balsam of copaiba*. This is obtained by tapping incisions into the stems of the trees. Most of the copaiba of commerce is brought from the Brazils, a very little being imported from Guiana and the West Indian island. This is about the consistency of olive oil, light yellow, transparent with a peculiar odour, and an acid aromatic taste. It is used as a stimulant of mucous surfaces, particularly, particularly of the urinary passages. It is a valuable remedy in gonorrhœa. Dose from $\frac{1}{2}$ to 1 fluid drachm. The oil of copaiba, obtained by distillation from copaiba, is given in doses of 5 to 10 minims.

COPAIBA BALM (See CATION.)

Copper, Kopph [Lit. *Cuprum*, from *Cynus*, Gr. *Kupros*, the name of the island where it was first worked on an extensive scale, in Chem., symbol Cu, equivalent 32.75, spec. grav. 8.97 to 8.95. It was called *Venus* by the alchemists who gave to it the symbol of that planet. Copper is a hard, sonorous, ductile, and malleable metal, of a characteristic reddish brown colour. Very thin films have been obtained which were of a beautiful green colour by transmitted light although of the natural colour by reflected light. It is one of the best conductors of heat and electricity, and expands especially in the intermediate zone, and boiling points of water. The melting point of copper is 1996° Fahr. and by exposing it to a very intense heat, it boils and volatilizes, burning with a brilliant green flame. Reacts like tin in the open air copper combines rapidly with oxygen, but

Cordials.

even moist air at ordinary temperatures has but little effect on it. In sea-water it becomes gradually corroded by the formation of an oxychloride of copper. The uses of copper are very important. With zinc it forms brass, and with different proportions of tin it forms bronze, bell metal, gun metal, and speculum metal. Its oxides and salts are largely used as pigments and in pharmaceutical preparations. Copper unites with oxygen in four proportions — 1 the suboxide or *anoxide*, Cu_2O , 2 the protoxide or *black oxide*, CuO , 3 the binioxide, Cu_2O_3 , and 4 *cupra* and the composition of which is not known. The salts of copper are characterized by their green or blue colour. They are nearly all soluble, and have a strong disagreeable metallic taste, acting as poisons on the humoral system. The symptoms of poisoning by copper are violent and irrepressible purgings and vomitings, followed by excretion and death. The hot infusion is albumen, or white of eggs with which they are run in like lumps and almost melt compound. In Medicine sulphate of copper strongly resembles that of zinc in its action. Internally it acts as an astringent tonic and inspissative in doses of $\frac{1}{2}$ to 2 grains, and is used in dyspepsia and in Asiatic cholera. In doses of from 10 to 20 grains it acts as a cathart. It is also used as an outward application to wounds which present granulated appearance known as "proud flesh." A mil' solution of it is also used internally as a stimulant lotion. Of late years copper has been used somewhat extensively to give a bright green colour to jellies and preserves. Its presence may readily be detected by incineration, the smoke rising while washing the article in water and filtering it, on the addition of 1 gill ammonia the solution strikes a deep blue colour. Copper is present

COPPER & COPPER WIRE — This term is applied with the prefix blue and green, to the sulphates of copper and iron respectively, also called blue and green vitriol.

CORTIS kop t. f. in Gr. κρύπτο, I cut] a son of plants belonging to the nat. ord. *Ranunculaceæ*. The species *C. trifoliata*, commonly called gold thread, is a native of North America, and is much prized for its root, which is a pure and powerful bitter, and forms an excellent emetic and tonic. The root of *C. Lepto* is found in the basins of India under the names of *mukha bitter* and *mukhi*. It is intensely bitter, and is very valuable to it.

CORDIALS or LIVER TINCTURES, cord. yds [Fr. *cordial*, from Lat. *cord*, the heart] are made by flavouring rectified spirit with different essential oils, such as aniseed, caraway, clove, peppermint &c., and adding a portion of sugar to neutralize the burning taste of the spirit. The term *cordial*

Coriandrum.

is also applied to such medicines as are of a warm, stimulating, or restorative nature, such as tend to raise the spirits and promote the general circulation.

CORIANDRUM, *kor-e-d'r'-dum* [from Gr. καρίανδρον, a dung, in allusion to the smell of the leaves], in Bot., a gen. of plant belonging to the nat. ord. *Umbelliferae*. The species *C. sativum*, the coriander, has long been cultivated for its fruit, improperly called seeds, which are used in the East for flavouring fish, and curry-powder, and in Europe for the purposes of the distiller, confectioner, and perfumer. They have a peculiar colour and warm aromatic taste due to the presence of a yellowish coloured volatile oil, and are stimulant, carminative in their nature but are chiefly employed as an adjunct to other medicines, as in tincture and syrup of rhubarb, tincture and infusion of senna, &c. An oil is distilled in Britain from the fruit called oil of coriander.

CORN [*Gr. κρίνων* a knop], in Bot., a solid underground stem which does not send up a stalk, but remains in a rounded form. It occurs in the tulip, crocus, &c., in many other monocotyledonous plants. It is distinguished by its root by producing annually small corms, or thickened branches. It differs from a bulb in being solid.

CORN [*Ang. Say.*], a term generally applied to all seeds used in making bread, especially the seeds of the cereal. The principal seeds of this kind in temperate climates are wheat, rye, oats, and barley; while those of warm climates are maize, rice, and millet. In more restricted sense the word *corn* is applied to the particular grain of a country which is most largely used in making bread. In England *corn* refers to wheat in Scotland to oats, and in America to maize.

CORNELIA [*Lat. cornu*, a horn] is a name given to one of the cymes of the vine, from its being of a horny consistency (*see Eis.*)

Corns, *Körn* [*Ang. Sax.*], are certain small, hard, excrescences occurring on the feet, arising from a thickening of the cuticle of epidermis, and owing generally to irritation, caused by excessive pressure or friction on the part. Corns are of two kinds—hard and soft, the latter being interposed between the toes. Frequently a burr or bag is formed beneath the corn which is apt to inflame and cause great pain and irritation. In the treatment of corns, the great object is to remove all undue pressure or friction, and for that purpose, the foot or shoe should be dry and pliant. This will be still further effected by protecting the corn with a small piece of thick soft leather, covered with diachylon or other mollient plaster, and having a hole in the centre, corresponding with the size of the corn. The feet should also be frequently bathed with

Corpulence.

warm water, and as much as possible of the corn carefully pared away, care being taken not to wound the more sensitive part. If the corn is very sensitive, it ought to be occasionally touched with lunar caustic, and if much inflamed a warm bread poultice should be applied to it. (See Sir R. Brodie's "Lecture on 'Corns and Bunions,'" in "Medical Gazette," of 13th February, 1846.)

CORNUS [*Cervina*, or *Harts-horn* (*see Ammonia*)]

CORNELIA [*Lat. cornu*, horn, the wood being held to be durable and hard as horn], the typical gen. of the nat. ord. *Cornaceæ*, the dogwood family, including several useful plants. The bark of *C. florida* is much esteemed in North America as a substitute for Peruvian bark in the treatment of intermittent and remittent fevers. The fruit of *C. maspilus*, the cornelian cherry, is aromatic, and has an acid juice, which is used by the Turks for flavouring their sherbets. The seeds of *C. sanguinea*, the common dogwood of our hedges, yield a fixed oil adapted for burning in lamps.

COROLLA [*Lat. corolla* [at a little crown], in Bot., the inner envelope of the flower, consisting of six organs called petals, situated in a circle to flower between the calyx and the stamens. It is generally the most conspicuous whorl of organs, being more or less coloured. It is, in fact, that part of the plant which usually delights us most by its gay appearance and fragrance. Petals are rarely green, though occasionally this colour is met with. When there is but one whorl of developing organs in the flower, it is regarded as the calyx, and the flower is said to be *apetalous*. The petals, like the sepals, may be either distinct or more or less united into one body. In the former case the corolla is said to be *poly-petalous* or *diapetalous*, in the latter, *monopetalous* or *rumpetalous*. The number of petals in a poly-petalous corolla is indicated by a prefix, as in the case of a polysepalous cyme, thus a corolla of two petals is said to be *dipetalous*, of three, *tripetalous*, of four, *tetrapetalous*, and so on. (See Bentley's "Manual of Botany")

CORONARIA [*Sutti*] (*See Brain*)

CORPULENCY, *kor-pul'ens* [*Lat. corpulentia*, from *corpus*, the body] is an undue bulkiness or size of the body, arising from an excessive accumulation of fat in certain parts. It is impossible to define exactly the limit beyond which the body can be said to be corpulent, depending, as it does, very much upon the general habit and the state of health of the individual. It most commonly takes place after the age of forty, but is not confined to any particular period of life, being to be found also in childhood and youth. The causes of corpulence are both natural and acquired. There are some persons who have a natural tendency to corpulence, in others it may be induced by modes of life,

Corpus.

indolent and sedentary habits, and the use of certain kinds of food. The undue accumulation of fat produces a variety of effects, interfering with the vital energies of the body, and incapacitating for exertion. The chances of life are not so great among persons of a corpulent habit as among those of a normal condition. All sudden or violent measures to get rid of corpulence are attended with harm; and not the least dangerous is the popular remedy of vinegar, which has the effect of destroying the digestive powers. Attention to diet and the avoidance of such articles as tend to generate fat together with active exercise and the counteracting of indolent habits are among the best means that can be employed. Dr. Chalmers in his annual lecture "On Corpulence," gives a variety of cases in which *Liquor potassae* was used with great effect in doses of $\frac{1}{2}$ to 1 drachm three times a day in milk and water; but this remedy should not be resorted to without the sanction of a medical adviser. Mr. Banting has published an interesting pamphlet on this subject in which he records the beneficial effects which he experienced from the following course of diet prescribed by Mr. W. Harvey. Breakfast at 6 a.m. 5 ounces of beef mutton kidneys broiled fish bacon or cold meat (except poul.), a large cup of tea without milk or sugar, a little bread or a ounce of dry toast. Dinner 5 or 6 ounces of my fish except salmon, any meat except pork, any vegetable except potato, a ounce of dry toast, fruit out of a pudding, any kind of poultry or fowl, and 2 or 3 glasses of claret sherry, rum, Madeira, champagn, port and hock or sherry. Tea 2 or 3 ounces of fruit, a rush or two a cup of tea without milk or sugar. Supper 2 or 4 ounces of meat or fish, and a pint or two of claret, brandy, milk, beer or earl soup, potatoes and beans were forbidden. The result of this was a gradual reduction of weight from 4 to 156 lb. There are numerous very remarkable cases of corpulence on record. Of modern instances known in this country, Mr. Bright, of Maidon in Essex, a respectable tallow chandler and grocer, who died on the 20th of November 1750 in the twenty ninth year of his age. He weighed 616 lb and it is said that even persons of ordinary size could be encircled in his waistcoat. Daniel Lambert who is supposed to have been the heaviest man that ever lived died at Stamford in Lincolnshire at the age of forty, on the 2nd of June 1829. He is said to have weighed some 12 lb, or 740 lb.

Corpus, cor pul. [Lat. body]. is a term applied in Aigst to certain parts of the animal structure as the *corpus callosum*, the *corpus quadrivisum*. (See BRAIN.)

Cosmocis is OF THE BLOOD (See BLOOD.)

COMBOSITE SUBLIMATE (See MERCURY, Bichloride of.)

CONSTANT MOSS (See GRACILARIA.)

Cough.

(ORIZA, a term applied to a cold in the head (See CATARRH.)

COSMETIC *kos metik* [Gr. *kosmeo*, to adorn] is a preparation used to whiten or soften the skin or otherwise to beautify and improve it. With the ancient Romans the term *cosmete* was applied to those slaves who were employed to dress and adorn their masters.

COTTON (See Gossypium.)

COTTON, G. n. (See PYROXYLIN.)

COVYLDON, ko vildon [Gr. *kotyle*, a cavity in allusion to the cup like leaves], a rudimentary leaf forming part of the embryo of a flowering plant.

COVYLDON, the Navelwort, a gen. of plants belonging to the 1st ord. *Crassulaceae*. The species *C. edulis* is a common plant in walls and banks in the West of England. It has long been in use as a popular remedy a poultice and as an external application to destroy corns and warts. Of late years it has been frequently employed as a remedy for epilepsy.

COVYLDON GRASS or DOL GRASS — *Tephritis reflexa*, a well known species of grass of the 1st ord. *Cyperaceae*. The underground stem is demulcent diuretic and alterative and by some said to partake of the properties of salsaparilla. It is recommended in spinaemia or irritability of the bladder or urinary passages. The infusion (1 ounce of the dried plant stem to 1 pint of boiling water) is given in doses of 3 or 4 ounces three times a day (See Lancet, October 12th 1861.)

COUGHING (See LATE DISEASES OF THE)

Cough, k f [Lat. *tus*, gr. *Du kuck*] is spasmodic action of the larynx or trachea causing a violent insidious noise or expulsion of air from the lungs. Coughing most frequently occurs as a symptom of some other complaint as catarrh, pleurisy, lithiasis &c and hence some nosologists have been led to regard it as always so. At times, however, it is as truly idiopathic as any other disease. It is of the utmost importance that the air passages to the lungs should be perfectly free from any obstruction and hence the larynx, trachea, and bronchi are endowed with a very high degree of irritability so that the slightest contact of a foreign body causes the most violent excitement. Coughing, then, is occasioned by an irritant in these parts, and is an attempt to get rid of the irritation. The air from the lungs is suddenly driven up with great force through the air passages, so as to carry with it any cause of irritation that may be present in them. Cough may also be excited by irritant vapours or gases, or may arise from an abnormal sensibility of the lining membrane. In most cases cough is attended with expectoration, but sometimes it is quite dry. When the mucous membranes of the air passages are unduly stimulated, the vessels become

Counter-Irritants.

overloaded with mucus, and coughing is produced to effect its discharge, as is frequently observed in catarrh. This kind of cough is often a chronic disease in old age, and is frequently very troublesome. The dry cough, which is mostly unattended by any expectoration, is obviously of a nervous character, and is observed in highly irritable, nervous, and hysterical constitutions. The treatment of cough, when symptomatic of any other disease, will be found noticed under other heads; as CATARRH, BRONCHITIS, PHLEGMESIS. When it is occasioned by the irritation of mucus, it is to be treated with demulcents; as mucilaginous drinks and liquors. Stimulants and full dressings are to be avoided, and inflammatory symptoms carefully guarded against. Sedatives, expectorants, and aperients are often very useful in effecting a cure. In dry coughs opium and its preparations should be used. Coughs should never be long neglected; for they are frequently symptomatic of organic disease, or may induce it.

COUNTER-IRRITANTS, *koun'-ter-i'-rit-ants* [Lat. *contra*, against], are certain substances employed to produce irritation artificially in some part of the body with the view of diminishing, counteracting, or removing irritation or inflammation in some neighbouring part. The slightest class, *rubefacents*, are such as merely reddens the skin; *resinants*, or such as produce vesicles or blisters, are a more powerful class, and not only cause counter-irritation, but prove evacuant; *pyrogenic counter-irritants*, or *suppurants*, are still more evacuant. Setons, issues, and the actual cautery, also belong to the class of counter-irritants. Rubefacients are chiefly employed in irritation of mucous membranes; vesicants in inflammation of serous membranes; and suppurants, setons, or issues, when the disease is of a suppurative character. There is no more valuable remedial agent than counter-irritation, and none more frequently employed with the best results; but it must be rightly timed and placed, not too soon, nor yet too near the seat of the disease. It should not be had recourse to until all acute action has fully subsided, otherwise it may not only fail in affording relief, but may aggravate the local and general disease. It should also be applied at some distance from the site of the original disorder, and yet not too far removed from it, so as to affect without aggravating it.

COUR DE SOLEIL. (*See SUNSTROKE*.)

COWHAGE. (*See MUCUWA*.)

COW POX. (*See VACCINATION*.)

CRAMP, *kramp* [Sax. *kramma*, Dn. *kramp*], is an involuntary and painful contraction of one or several of the voluntary muscles connected with a certain part or organ, as of the leg, foot, or arm. It is often the result of cold, is sometimes occasioned by a greatly

Cretinism.

disordered state of the bowels, and frequently comes on without any obvious cause. In general, cramp is readily removed by a forcible exertion of the antagonist muscles, so as to overcome the spasmodic contraction, or by friction and warmth. Cramp of the stomach is to be combated by the external and internal use of stimulants, and by opium, ether, and other antispasmodics. (*See SPASMS*.)

CRANIUM. (*See BRAIN*.)

CRATAEGUS, *krat'-e-gus*, a gen. of plants belonging to the nat. ord. *Eosaceæ*. The species *C. oxyacantha* is the hawthorn, whitehorn, or May, so well known for the beauty and fragrance of its flowers, and for being the best hedge-plant in Europe. Some varieties of this species are highly ornamental, producing double pink or scarlet blossoms.

CREAM OF TARTRATE, in Chorn., *bittertartato-*

potash. (*See POTASH, BITARTRATE of*)

CREASOTE, *kre'-o-soot* [Gr. *kreas*, flesh; *sos*, I preserve,]. A fluid containing oxygen, hydrogen, and carbon, first found by Reichert, in the heavy oil obtained by the distillation of wood-tar. When pure, it is a colourless oily liquid of high refractive power, boiling at 398°. It has a burning taste, and its odour is peculiar. It is sparingly soluble in water, to which it gives its odour and taste, is freely soluble in acetic acid, alcohol, ether, benzol, and tersulphido of carbon. It coagulates albumen immediately, and is the most powerful antiseptic known. Meat that has been plunged into a solution containing only 1 per cent. of this substance becomes dry and hard on exposure to the air, and does not become putrid. Creasote given internally acts as a sedative, and is very useful in certain disorders of the stomach, especially in allaying severe vomiting. Dose, 1 to 3 drops. Applied externally it serves to allay rheumatic and neuralgic pains, and will frequently relieve toothache. It is also useful in inducing a healthy action in indolent sores. *Creasote ointment* consists of 1 fluid drachm of *C.* and 1 ounce of simple ointment thoroughly mixed. *Creasote mixture* consists of 16 minims each of *C.* and glacial acetic acid, $\frac{1}{2}$ fluid drachm of spirit of juniper, 1 fluid ounce of syrup, and 15 fluid ounces of distilled water. Dose, 1 to 2 fluid ounces. Creasote is also sometimes inhaled by mixing 12 minims with 8 fluid ounces of boiling water in an apparatus so constructed that air may pass through the solution and be afterwards inhaled.

CURETA. (*See CHALK*.)

CRETINISM, *kre-tin-ism*, is idiocy arising from imperfect formation or development of the brain, and generally accompanied with great bodily deformity. The name is of uncertain origin. Some derive it from *Christians* [Fr. *chrétien*], because they were generally regarded as beings incapable

Cretinism.

of stupor, and thus were viewed with some kind of respect. According to others it is from the Romance or *Lauson cretina*, a corruption of the Latin *cretina*, a corruption of the Latin *creta*, a limestone. These unfortunate beings are chiefly to be met with in the valleys of the Alps, particularly in the Swiss canons of Valais, Vaud, Grisons, Glarus, Uri, and Aargau, but they are by no means confined to those parts, being much more extensively spread than was at one time supposed. Character.—The tinture is often accompanied with goitre (which see). There are various degrees of Cretins; some seem to be sunk in intelligence below the level of many of the brutes, while others are able to go about and attend to some easy labour. The Cretin seldom attains more than 4½ feet in height. The cranium is deformed and has a conical shape, the forehead being thrown backwards, narrowed, and flattened, and the occiput being nearly on a line with the neck. The eyes are small, the nose broad and flat, the mouth large and open, with the tongue often protruded and the whole countenance is idiotic or expressive only of insensibility. The flesh is soft and flaccid, the skin wrinkled, yellowish or pale and cadaverous, the belly full and pendulous, the limbs crooked, short, distorted, and the gait ungraceful and waddling. Cause.—The cause of this infirmity is still matter of dispute among physicians. Some attribute it to the nature of the water by which an undue amount of calcareous salt is conveyed into the system others to the stagnation of the atmosphere in the deep narrow valleys, or to malignant poising or malarious influences prevalent in certain districts. There are other causes that may possibly exert an influence upon it, as the poor diet and filth, vice and intemperate habits of the people among whom it exists, together with the intermarriages among near relatives. There can be no doubt that it is in some measure hereditary, though all the children of a family are not affected by it. Treatment.—Many attempts have recently been made to improve the condition of the Cretin. The first intent to be done as soon as the disease manifests itself (for in many cases it does not appear till some time after birth)—sometimes even before the sixth or seventh year) is to refine the sufferer to a pure breathing atmosphere. The treatment required is first to get the body into a healthy condition by simple and nourishing food, warm clothing, frequent bathing and friction of skin and gentle exercise. The development of the mind will follow that of the body but must be done very gradually. Dr. Guggenbühl was the first who made any systematic attempt to educate the Cretin. He opened his institution on the Aebenberg in the canton of Bern, Switzerland, in 1787, and since that time several other institutions for the same

Crotchet.

purpose have been established on the continent (See 'The Physician's Holiday' by Sir John Forbos, 1852).

Crisis, *kr'isis*, [*Gr. κρίσις*, I decide], in Med., denotes the decisive period or event of a disease,—a sudden and considerable change of any kind occurring in the course of its progress, and producing an influence upon its character. Among ancient physicians it was applied to that tendency which fevers were supposed to possess, of undergoing a sudden change at particular periods of their progress. Hence there were what were called *critical days*—certain days in the progress of an acute disease on which a sudden change, either favourable or unfavourable, would take place. The seventh, fourteenth and twentieth or twenty-first days were regarded as eminently critical. In the course of acute disease, and particularly of fevers, there usually occurs, after a certain time, some abundant excretion of discharge, perspiration, diuresis, or purging, attended by a sudden fall in the temperature of the body. The term *crisis* is applied to this period of the disease and the *critical day* on which it happens, counting from the day of seizure is called the *critical day*, from which dates the period of convalescence the patient having then got what, in common language, is called "the turn."

Critomium, *kr'ith-mi'um*, a gen of umbelliferous plants. The species *C. minus umbellatum* is the safflower which is commonly used as an ingredient in mixed pickles. It is found growing on the sea shore, and occasionally on hillsides.

Crocus, *kr'os* [*Gr. κρόκος*], a gen of plants belonging to the nat ord *Iridaceæ*. In the species *C. sativus* and *C. color*, in various varieties, have been produced in cultivation, which are of great value in the flower garden, on account of the early flowering and remarkable brilliancy of their flowers. *C. sativus* is the saffron crocus. The dried stigmas of this plant, with the top of the style, constitute *Crocus saffron*, which are picked together, *crocus saffron*. Saffron is principally employed as a colouring agent in perfumery and medicinal, and certain nervous infusions, and as an emmenagogue.

Crotalaria, *kr'ot-á-lá-ri-a* [*Gr. κρόταλον* the dog-toe] in reference to the resemblance of the seeds to that vertebra in a gen of plants belonging to the nat ord *Labiatae*. The seeds of the species *C. Tinctorium*, and probably also those of *C. Parviflora*, constitute the *crotalaria* or *crotolum* seeds, of the *materia medica*. They yield by expression, an oil called *crotoneum*, of a brownish yellow colour, slightly viscid, of an acrid taste, and with a faintly narked odour. In doses of from 1 to 3 minims, it is a powerful drastic cathartic, and, when applied externally, acts as a rubefacient and counter irritant. The *crotoneum* or *unimentum* of

Group.

the lachrymal paste is composed of 1 fluid ounce of creton oil, and $\frac{1}{2}$ fluid ounces each of oil of cajeput and rectified spirit, and is very useful as a counter-irritant in subacute inflammations of the chest, bringing out an eruption of pustules in a few hours. The seeds are used without preparation, in India, as purgative pills. *C. Bleuetaria* and *Cassarilla*, natives of the Bahama islands and Jamaica, yield the aromatic tonic bark commonly known as *cassarilla* or *clerodendron* bark. It is warm and bitter to the taste, and emits a fragrant odour when burned. It is a stimulant tonic, and is used in dyspepsia, and in debility of various kinds. It is an excellent adjuvant to emetics with which it is frequently combined. The infusion (1 ounce of the powdered bark, to 10 fluid ounces of boiling water) is given in doses of 1 to 2 fluid ounces, the tincture ($\frac{1}{2}$ ounce of bark bruised, to 1 pint of proof spirit) in doses of $\frac{1}{2}$ to 2 fluid drachms. *C. grandiflora*: China yields the quilled palm leaf of Poria, and *C. suberosum* the rock copalche bark of the same author. In their medicinal properties the copalche bark has a resemblance to trilia. The aromatic bark known as *Mallando* bark is the produce of *O. Malambo*. It is extensively used in Columbia as a remedy in diahrhoea, and as a vermifuge, also externally, in the form of an alcoholic tincture, in ulcerous diseases.

Croup, Kröpp [Ang.-Nor.] is an acute inflammation of the mucous membranes of the larynx, but frequently extending also to the trachea and bronchial tubes. This disease is not mentioned by medical writers before the middle of last century, and it is the opinion of many that it did not exist prior to that time. It is a disease that is very prevalent and fatal among infants. I probably one half of the children attacked by it, die, and of the deaths among children about one in twelve is owing to this disease. **Symptoms**—It is usually preceded by the symptoms of a common cold, with hoarseness and a harsh cough, pain in the head, fever, and swelling and redness in the back of the throat, but it may make its appearance suddenly during the night, in the midst of apparent health. In a short time the respiration becomes noisy and difficult, accompanied by a crowing sound during inspiration. The face is red and swollen, the eyes suffused, the head thrown back, and everything indicates the great sufferings of the patient. In extreme cases, as the disease advances, the breathing becomes more difficult, the cough more suffocating, the voice stifled, and the countenance livid; and gradual insensibility or convulsions at length close the scene. The fatal issue often takes place in thirty hours, and even less, but most frequently it happens about the end of the second or third day, though it has sometimes been known to run on to the fourth, fifth, or sixth day,

Cruciferæ.

or even longer. The disease is most common between the first and tenth year, and rarely occurs after the age of sixteen, though occasionally it is to be met with among adults. It is most common in cold damp seasons, and in low marshy localities. **Treatment**—In so rapid and fatal a disease, medical advice ought to be immediately obtained. Bleeding, except by leeches, is not now generally approved of by medical men, some recommend emetics and purgatives, others opium and calomel. Warm bathing, or sponging with warm water, should be had recourse to, as well as the inhalation of a watery vapour, and the air of the room kept warm and moist. Sponges, dipped in hot water, and wrung thoroughly dry, should be repeatedly applied to the throat. It is sometimes necessary to have recourse to tracheotomy, in order to prevent suffocation.

Crucible, Kre' or Cr' Ital. crociale—*In Chem.*, crucible are vessels made of some material capable of resisting a high temperature, used by chemists and metallurgists for fusing metals or chemical compounds. According to the material to be melted, and the heat required for fusion, they are made of platinum, iron, plumbago, porcelain, clay, or lime. Those in use of high refractory clay, such as the Cornish or Hessian crucibles, are most usually employed. They will stand a very high heat without melting. Plumbago crucibles serve a double purpose, acting not only as vessels, but as reducing agents. Platinum crucibles are used in operations where a clay crucible would be acted on by the fluxes employed. Where a very high temperature is required as, for instance, in melting platinum, a lime crucible is used. Italy, Miers Johnson and Matthey have introduced crucibles made of an alloy of platinum and iridium, which have many advantages over those made of platinum only.

Cruciferæ, or Brassicaceæ, kru'si-fér'ē [Lat. *crux*, cross, *fero*, I bear], the Cruciferous or (Lobiger) family, a nat. ord. of dicotyledonous plants in the sub class *The-laminoë*, having the following well marked characters—The leaves are alternate, and without stipules. The flowers are usually arranged in racemes, also generally without bracts, and mostly yellow or white, seldom purple, sometimes a mixture of these colours. The sepalæ are four in number, deciduous, imbricate, or valvate. The petals are also four, by porosity, cruciform, alternate with the sepals, and deciduous. The stamens are tetradynamous (i.e. in number, four of which are long, and two short). The gynoecium is furnished with green glands placed between the stamens and the ovary. The ovary is superior, one celled, or usually two celled in consequence of two parietal placentæ meeting in the middle, and forming a spir-

Crystalline Lens.

one dissepiment or partition. Stigmas two, situated opposite the placentas. The fruit, which is termed *siliqua* or *siliqua*, is one celled, or sparingly two celled, and one or many-seeded. The seeds are stalked and have no albumen. The order is one of the most natural known, and is eminently European. There are 195 genera, consisting of about 1,600 species, which are principally herbaceous plants. The possession of anti-vortative and stimulant properties, combined with an acid flavour, may be said to constitute a universal character of this order. The panacea of cruciferous plants depends on a volatile oil composed of carbon, hydrogen, nitrogen, oxygen, and sulphur. An oil expressed from the seeds is one of the most important products. Many of them are valuable as culinary vegetables (see Brassica, MIMOSA).

CRYSTALLINE LENS, *lens filum* [Lat. *crystallus*, a crystal lens], is the lens of the eye, a lensiform pulviled substance enclosed in a membranous capsule and situated in a depression in the anterior part of the vitreous humour (see EYE).

CRYSTALLIZATION, *crustilisatio* [Lat. *crystallus*, a crystal; *luz*, lumen] may be defined as the spontaneous assumption of well-defined geometrical forms by bodies in passing from the fluid or aeroform state to the solid condition. Bodies not capable of assuming the crystalline form are termed *amorphous*, or *non-crystallizable*; those which form crystals, *crystallizable*. When a substance crystallizes in two distinct forms, which can not be derived from the same original, it is said to be *dimorphic*. Sulphur in its stannic, will crystallize in octahedra or prismatic crystals. Some substances are even *tridimorphic*. Sulphate of nickel crystallizes in light rhombic prisms, square bended octahedra, and oblique rhombic prisms according to the temperature at the time of evaporation. Bodies crystallizing in similar forms are called *isomorphic*. Crystallization may be effected in several ways—by evaporation, by sublimation, by fusion, or by slow cooling action.

CUBEB, *ku be'eb* [Arab. *cubebah*], a gen. of plants belonging to the nat. ord. *Piperaceæ*. The species *C. officinalis* a native of Java and Prince of Wales' Island yields the berries called cubeb, which are extensively employed in medicine for their peculiar power of arresting excessive discharges from the urethra. Cubeb is resemble black pepper, but may be distinguished by a series of raised veins on their surface, made by the short stalks which they possess. Dose of powder, 30 to 100 grains, three times a day. The oil of cubeb is obtained in England by distillation and is given in doses of 5 to 10 minims. The tincture (.36 ounces, in powder, to 1 pint of rectified spirit) is prescribed in doses of 1/2 to 2 fluid drachms.

CUPPUS (See CUPPING).

Cupping.

CUCUMBER (See CUCURBITA).

CUCUMBER, *ku koo' me*, a gen. of plants belonging to the nat. order *Cucurbitaceæ*. The fruit of *C. sativa* is the common cucumber, and that of *C. Melo* the melon. The fruits of the species of *Hardwickia* and *Pseudococcinia* are said to be powerfully cathartic.

CUCURBITA, *ku ku'bita* [Lat. *cucurbita*], the typical gen. of the nat. ord. *Cucurbitaceæ*. The fruits of several species are employed as articles of food, thus, that of *C. Citrullus* is the water melon so highly esteemed for its cooling and refreshing juice, that of *C. Osiria* is the vegetable marrow, one of our most delicate table vegetables, that of *C. maxima* is the red gourd or pumpkin, which, when boiled, taste like a young ewe's milk, and (*Pepo*) is the white gourd a favourite culinary vegetable in the continent. An oil called *equie* by the inhabitants of Yoruba, in Africa, and largely used by them for dietetic and medicinal purposes, is supposed to be the production of one or more species of this genus.

CUMIN, *ku um' um* [Gr. *komon*] in Bot., a gen. of composite plants. *C. Cyminum* the cumin is a dwarf annual looking plant cultivated in the south of Europe and Asia Minor for its fruit which are hot and aromatic, like those of the caraway and anise.

CUPPL, *ku pel* [Lat. *cupula*] in Chem., a small cup made of bone ash, used to extract base metals from gold and silver. The compound on being heated in a cuppl, loses the base metals by the becoming oxidized and sinking into the cuppl.

CUPPING, *ku ping* [from the cup like form of the glass vessel used] in Surg., is the application of cupping glasses, from which the air has been previously extracted to the skin with the view of abstracting blood to the part, and, if necessary, abstracting it. Cupping was practised by the ancients, and is frequently had recourse to in the present day. In performing the operation, the part is first washed with warm water in order to promote the flow of blood to it, and then a small bell-shaped glass, from which the air has been partially expell'd by holding it over an instant over the flame of a spirit lamp, is immediately applied to the spot and the usual amount of pressure on the part being thus diminished the blood flows towards it producing a distension of the blood-vessels and an elevation of the surface. This is called *dry cupping*, and is frequently of great service in the removal of certain kinds of pain. Several glasses may be used and usually the operation is repeated five or six times. The glass is readily removed by inserting the nail of a finger between the edge of it and the skin so as to admit the air. When it is intend'd to abstract blood, the cupping glass is re-

Cuprum.

moved as soon as the part is sufficiently swollen, and the scarificator applied to it. This instrument contains a number of lancets (usually about ten or twelve), which, by touching a spring, are made to inflict a corresponding number of wounds, the depth of which may be regulated by the operator. Immediately on the wounds being made, the cupping-glass is applied, exhausted as before, and the blood allowed to flow into it until a sufficient quantity has been abstracted. If the blood coagulates, or the glass be full, it should be carefully removed, and the part sponged with warm water, and the glass, if necessary, again applied to it. After the operation, the wounds should be closed with lint and plaster, and pressure should be kept on the part for some days in order to prevent secondary hemorrhage. Cupping is preferable to any other method of blood-letting in many kinds of inflammatory disease.

(See *CORRIG.*)

CURACAO., *ku-rá-só*, a sweet and agreeable liqueur obtained by digesting orange-peel in sweetened spirits, and flavoring with cinnamon and cloves or mace. It is made in great perfection by the Dutch in the islands of Curacao, from which it derives its name. The spirits employed in its manufacture are usually reduced to nearly 50 under proof, and each gallon contains about $\frac{3}{4}$ pounds of sugar. Curacao varies in colour, the darker kinds being produced by digesting in it powdered Brazil-wood, and mellowing the colour by caramel or burnt sugar.

TURMERIC., *ku-rú'-mér* [Arab. *curkum*], a gen of plants belonging to the nat. ord. Zingiberaceæ. The dried tubers or rhizomes of *C. longa* constitute the *turmeric* of the shops. It is extensively cultivated in almost every part of India, being employed as a condiment by the natives. It forms the principal ingredients of curry powder, giving to that compound its peculiar odour and bright yellow colour. As a medicinal agent, turmeric is a mild aromatic. The rhizomes of another species, *C. angustifolia*, contain mucil starch, which, when extracted, forms East Indian arrowroot, or curcuma starch.

CURRENTS,, *ku-réntz* [from *Corinth*, where they were originally grown], the dried fruits of a variety of the grape-vine, now extensively cultivated in Zante and several other of the Greek islands. About 20,000 tons of these minute raisins are annually imported into this country. (See *VITIS*.) The currants of English gardens, red, white, and black, are the produce of species of *Mitis* (which see).

CURRY POWDERS OR PASTES., *ku-rí'-pés*, a component much used in India and this country for seasoning a great variety of dishes. It is made by mixing together turmeric with various spices; such as coriander-seed pow-

Cyanosis.

der, black and cayenne pepper, ginger, &c. (See Mrs. Beeton's "Book of Household Management.")

CUPARIA BARK. (See *ANGUSTURA BARK*.)

CUSCO OR KOSSOO. (See *BRAYEKA*.)

CUT. (See *WOUNDS*.)

CUTANEOUS DISEASES. (See *SKIN, DISEASES OF THE*.)

CUTICLE. (See *SKIN*.)

CYANIC ACID., *si'-án'-ik*, in Chem., C_2HNO_3 or C_2O_4HO .—When cyanogen is passed through a solution of an alkali, a change takes place similar to that which occurs when chlorine is used in the same manner. Cyanide and cyanato of the base are produced, the cyanic acid, however, containing only one equivalent of oxygen, instead of two, as in the case of chloric acid. It is extremely pungent, very volatile, and acts as a powerful caustic if dropped on the flesh. It cannot be preserved, as it gradually changes into a white glassy mass, destitute of acid properties, insoluble in water, and permanent in air.

CYANOGEN., *si'-án'-o-jén* [Gr. *knéos*, blue, and *gnéao*, I produce], in Chem., symbol C_2 or N_2 , equivalent 16, spec. grav. 1.064, combining volume 2. The name *cyanogen*, signifying blue-producer, was bestowed on this substance in consequence of its forming an essential ingredient in Prussian blue. Cyanogen cannot be formed by the direct union of its elements, but may be obtained by passing nitrogen over a mixture of charcoal and carbonate of potash heated to redness in a porcelain tube. The mass, when cold, is digested in water, which dissolves out the ferrocyanide of potassium. Ten parts of this salt, distilled with seven parts of oil of vitriol and five or six parts of water, yield hydrocyanic or prussic acid, which, if saturated with oxide of mercury, furnishes cyanide of mercury. This on being dried and heated, in a retort, furnishes cyanogen. It is a colourless gas, with a peculiar penetrating odour. It is poisonous in its effects if breathed, and it burns with a beautiful purple flame. It dissolves in one-fourth of its bulk of water, in one-twenty-fifth of alcohol, and may be submitted to a high temperature without decomposition. It is easily liquefied by a pressure of four atmospheres. In the liquid state it is colourless, limpid, and lighter than water. At -3° Fahr. it freezes, forming a transparent crystalline solid. The principal compound of cyanogen is cyanic acid, composed of an equivalent of hydrogen and an equivalent of oxygen. (See *CYANIC ACID*.) For an account of the theory of cyanogen and its compounds see the third volume of Miller's "Elements of Chemistry."

CYANOSIS, or BLUE DISEASE., *si'-án'-o-sís* [Gr. *knéos*, blue], is a disordered condition of the system arising from a malnutrition of the heart, which allows the intermixing of the

Cyder.

vessels with the arterial blood, in consequence of which the former is not properly oxygenized and a blueness is imparted to the skin, whence the disease takes its name. It usually manifests itself soon after birth, and those affected by it generally die at a very early age but occasionally they reach mature life. Little can be done in the treatment of this disease beyond the adoption of palliative measures. The avoidance of fatigue or mental excitement, nourishing diet, warm clothing and a pure mild air, include probably all that can be done for the patient.

CYDOR. The fermented juice of apples, much used in some parts of England as a common drink. It is more wholesome than beer, containing but little alcohol its characteristic principle being malic acid.

CYDONIA or *do-na* [so named because a native of Kydon, in the island of Crete; the Quince, a genus of plants belonging to the nat. ord. *Rosaceæ* and sub-ord. *Pomaceæ*. *C. vulgaris* is a deformed low tree, sometimes cultivated for its fruit which is a pome with a persistent calyx like the medlar. This fruit is mixed with 12 pieces in making pies and tarts and is much esteemed for the preparation of a kind of marmalade. In the rind of the quince Wohler has found conin in the ether, to which its peculiar fragrance is due. The seeds contain much mucilage and are occasionally used for preparing handline.

CYDRE *sime* [Gr. *lappa* a sprout] in Bot. a common term for the different kinds of delicate inflorescence, that is to say, for every inflorescence formed of a terminal flower, beneath which are lateral branches each having a terminal flower and lateral branches again similarly dividing, and so on.

CYGMANTHUS, *si-gan-thus* [Gr. *kyon*, a dog and *anthos* a flower] from dogs being said to be subject to it, is used in Med. to denote sore-throat (See QUINCE, LABYNGITIS, CYONI DYSMETERIA.)

CYPERACEÆ *si-per-e-see* the Sedges form a nat. ord. of monocotyledonous plants in the sub class *Gramineæ* consisting of grass-like or rush-like herbs natives of all parts of the world and found especially in marshes, ditches, and the neighbourhood of running streams. The rhizomes tubers, or corms of some species of the typical genus *Cyperus* were formerly employed in Medicine as aromatic tonics and astringents. When boiled or roasted, some of these corms are edible.

CIST, *si-st* [*si*, *kistes* a bladder] in Anat. is applied to the urinary bladder, gall bladder and similar vessels in the human body, but it is also applied to morbid growths within the body having the form of a bag or bladder, and enclosing morbid matter.

CYSTITIS. (See BLADDER.)

Dandriff

CYTINACEÆ, *si-tin-ah-see* in Bot., the Cistanche family, a small nat. ord. of dicotyledonous plants in the sub-class *Mono-chlamydeæ* consisting of root parasites of a fungoid texture. The plants of this order occur in the south of Europe and Africa growing as parasites upon the roots of *Cistus* upon fleshy *Euphorbia* trees and upon other succulent plants. Some have astrigent properties as *Cytinus Hypocistis*, from which an extract is made in the south of Europe and there used in diarrhoea and for arresting hemorrhage.

CYTISUS *si-tis* in Bot., a genus of trees and shrubs of the nat. ord. *Juglandaceæ*. The *C. laburnum* is the common laburnum tree, the seeds of which are of a very poisonous nature, depending on a principle called *Cytisine*. The *C. scoparius* or common broom is diuretic and is strongly recommended by some in dropsical affection. The tops least of seeds, and roots are the parts usually employed. A decoction of the green tops (one ounce in a pint of water boiled down to half a pint) may be given two or three spoonfuls three or four times a day.

D.

DAISY. (See LILLY.)

DANCING MANIA in epidemic disorder among young people in which unitation is the right about under highest excitement. It is closely allied to hysteria and manic-palsey occurs among persons who are devout in their practices of mysticism. During the Middle Ages epidemics of this class were common in Germany and in Italy they were attributed to the bite of the tarantula spider. Towards the close of the 14th century a number of men and women appeared at Alzey, especially on the festival of St John dancing and screaming in frantic狂妄 in the streets. Many flocked at the mouth and danced till they fell down insensible, others dashed their brains out against the walls. While dancing they were unsusceptible of outward impressions but were haunted by visions. The epidemic spread over the Low Countries, and bands of wild and ignorant people traversed the country and excited by wild music danced themselves into convulsions singing all the time in derision of the priests. At the beginning of the 17th century, St Vitus's dance, as it was then called was on the decline, and is now only heard of in isolated cases.

DANDRIFT. (See TARAXACUM.)

DANDRIFT or SCURF, *dun-drift* are white scales or flakes which occur in the head, sometimes in great numbers. It is a natural discharge of the skin, and only troublesome when excessive, but not in any way dangerous. Frequent washing of the head with

Daphne

soap and water and the application of an alkaline or spirituous lotion, as 2 ounces of solution of caustic potash to 1 pint of water, or rum and water will generally serve to remove it.

DAPHNE *daf'ne* [the Greek name of the laurel] a genus of plants belonging to the natural order *Thymelaeæ*. The species are mostly shrubby evergreens of great beauty with leaves of a peculiar velvet texture and very fragrant flowers. The bark of *D. Mezzatum*, the mezereum, or "purple olive" is officinal in the British Pharmacopœia. It may be used externally as an irritant and vesicatory and as a medicament in toothache. Internally it is employed as a stimulant diaphoretic, the alterative and diuretic. But it is seldom given alone being usually combined with sarsaparilla of the compound decoction of which it forms one of the ingredients. The *Etheral Larch* (composed of 1 pound of the bark, 8 pints of rectified spirit and 1 pint of ether) is an ingredient in the compound liniments of mustard. The bark of *D. Laureola*, the spurge laurel is sometimes substituted for the officinal bark.

NATURAL DATE *[In the Talmud its Arabic name is]* a sort of plant below mentioned by the Rabbis. In species it is like the thorn apple, a plant bearing extra ordinary and singular parts. It is much employed in Medicine as an emollient and antispasmodic its effects resembling those of belladonna. In spasmodic asthma it smoothes the herb, or inhalation from its infusion in hot water frequently gives great relief but in some instances when thus used the herb has produced fatal results. A strong decoction of the leaves in water is used in certain China as a remedy in hydrocephalus in which terrible disease it is reported to be very efficacious. Siam imm owes its principal activity to the presence of a narcotic alkaloid called *laetrin* which much resembles *strychnine* and *strychnine* all 3 kinds of *Hydrocyanic acid* and the *Belladonna*. The *date* is especially abundant in the seeds it is a powerful poison and strongly deters the thief. The extract of *tritomium* is formed by taking 1 pint of ether, and shaking it in a bottle with half a pint of water and then decanting the ether. The ether is then poured slowly over 1 pound of the seeds of *siamea* the powder in a percolator in order to let them from the oil. Proof spirit is then slowly poured over the residue until it is exhausted. Distill off most of the spirit and evaporate the remainder by a water bath until the extract is of a suitable consistency for forming pills. Dissolve quarter to half a grain. The *liniment* (1/4 ounce of the seeds bruised to 1 pint of proof spirit) is given in doses of 10 to 30 minims. *Itatula metal ferox festuca*, and *sanguinaria*, have similar properties to *D. Stramonium*. The fruit of *D. san-manea*, the red thorn-apple, is used by the Indians of the Andes

Deafness.

and of Central America for preparing a narcotic drink, which produces a peculiar kind of intoxication, and is supposed to put those who partake of it in communication with the spirits of their ancestors (See Johnson's "Chemistry of Common Life")

DATCUS, *dat'-kus* a genus of plants belonging to the sub-ord. *Umbelliferae*. *D. Coriaria*, var. *sativa*, is the cultivated or garden carrot so much esteemed for its esculent roots. These roots are occasionally used in medicine as a poultice, for their moderately stimulant properties. The term is derived from the Greek *dax*, I make hot, in allusion to the medicinal effects.

DEADLY NIGHTSHADE, OR DWALE. (See Atropa)

DIAPHRYS *di-f'res*, is a considerable or entire loss of the sense of hearing. Hearing is produced by the vibrations of the air striking on the tympanum or drum of the ear and is communicated to the auditory nerve by means of a series of small bones connected in a very remarkable manner (See Ear). *Cause*.—Deafness may be congenital—arising from some original malformation of the organ or it may result from disease or accident impairing or destroying some portion of the delicate organum of the ear. It frequently results from some obstruction in the external passage of the ear which interferes with the transmission of sound to the tympanum. This is often occasioned by an accumulation of cerumen or wax in the ear which is secreted by the glands of the passage. The most speedy and effectual way of removing this is by washing the ear with warm water three or four times a day, until it is brought away. Inserts and other foreign bodies sometimes lodge in the ear and occasion deafness, or ulcers or microbial growth may form in the ear and thus interfere with the transmission of sound. The tympanum may be inflamed, thickened or injured to such a degree as to be wholly incapable of performing its office of transmitting sound. Obstruction of the Tustachian tube which conveys air from the back part of the mouth into the internal cavity of the ear, will often occasion a considerable deal of deafness. Hence inflammation and other disease of the throat have frequently thus effect. Deafness also sometimes results from derangements in the minute and complicated parts of the organ which are beyond the reach of direct observation, and consequently are but imperfectly understood. The nerves by which impressions are communicated from the internal ear to the brain are also subject to disease, and may occasion deafness which may also result from diseases of the brain itself. Long exposure to loud distressing noise, a cold, various fevers and inflammations, rheumatism, headache and repelled cutaneous eruptions frequently produce deafness. *Treatment*.—The articular plan of treatment

Death.

to be pursued will depend upon the nature of the cause, and will necessarily vary considerably in different cases. The diseases that affect the ear are the same as those that affect the other organs of the body and are to be treated upon the same principles. When they result from inflammation the inflammation is to be treated in the usual way (*see INFLAMMATION*), when from polypi or morbid growths those are to be removed by lunar caustic or a surgical operation, when from nervous debility, the general tone of the system is to be strengthened. When an obstruction of the Lutachian tube is the cause of deafness it is often removed by perforating the tympanum. When it results from a partial or entire loss of the tympanum, an artificial one may be employed, the best being that invented by Mr. Joseph Toynbee, of vulcanized India rubber, attached to the end of a fine silver wire by means of which it may be inserted or withdrawn at pleasure (*see "The Diseases of the Ear," by Joseph Toynbee, I R S London, 1860*.)

DEATH. death, in common language is opposed to life and is considered as the cessation of it. It supervenes as the necessary termination of all that long succession of phenomena of which life consists. Death may result either from the general failure of the vital powers in old age or from some disease or injury in some of the vital organs, which extends itself to the organism in general. The signs of approaching death are necessarily various, and depend in a great measure, upon the nature of the disease. In some cases there is a dulness of the sense, inactivity of the muscles, decay of the intellect and extinction of the sensiments, as in death resulting from old age. There is, also, frequently some degree of delirium, which is often of most interesting and pleasing character, resembling dreams more than any other form of derangement, sometimes again the dying fits of the individual are of the most dreadfully distressing character, but it is presumption, as many do, to hazard much upon the various modes of terminating the career of life. In the delirium the reproduction of visual sensations often bears a considerable part, and frequently the victim of typhus is seen clutching at something in the air, or picking at it on the bedclothes. The sense of hearing is frequently also affected, and imaginary voices, and sounds of tolling bells, &c., are heard. **Dementia,** or mental debility, sometimes comes on shortly before death, and for the most part manifests itself in an incapacity of concentrating the ideas upon one object, or by an almost total failure of the memory; this mental weakness often painfully manifests itself in the apparent pleasure which the sufferer takes in some of the most childish amusements. The voice generally becomes low and weak as death

Debility.

approaches, but sometimes it has a shrill pitch than natural sometimes it is husky and thick, and not unfrequently it diminishes to a mere whisper. The muscular system generally becomes feeble and relaxed; the pulsations of the heart gradually feebler, but more frequent the respiration sometimes hurried and panting, sometimes slow, laborious, and tertorous. There is frequently, also, an accumulation of fluids—mucous, serous, or purulent in the bronchial tubes. What is known as the "death rattle" is produced by the passage of the air from the lungs through the fluid collected in the trachea and upper respiratory passages. The most hurried are often impatient of any kind of clothing, throwing off the bed clothes, and lying with chest bare, and arms extended, and the neck as much exposed as possible. Among the other signs of approaching dissolution are the sunken eye, the hollow temple, the sharpened nose, the forehead dry, tense and harsh, the complexion shallow, livid or black, the lips cold, flaccid, and pale or of a dusky hue. We believe that the opinion that generally prevails of the great amount of sufficing that immediately precedes death, and which is expressed by such words as the death struggle or agony of death is very erroneous. There is every reason to believe that as death approaches the sensibilities are gradually diminished, and that in most cases consciousness has ceased before the struggle commences. Those who have made the newest approach to total death, as in drowning, hardly describe their feelings as being of an extremely painful kind. The consequences of death first become apparent in the organs of sense and motion, the eye loses its brightness, and the flesh its elasticity, the muscles become stiff, and coldness and pallor spread over the whole body. Yet it is still a very difficult matter to distinguish between real and apparent death. The most reliable test is afforded by the condition of the muscular system, for after real death this gradually loses its irritability so that it can be no longer excited to contraction by any kind of stimulation, and this loss of irritability is succeeded by the appearance of cutaneous rigidity. The most satisfactory proof, however, is given by the occurrence of putrefaction, which usually first manifests itself in the blue green coloration of the cutaneous surface, especially of the abdomen, but which speedily extends to other parts. (*See Todd's "Cyclopaedia of Anatomy and Physiology," Carpenter's "Human Physiology," Muller's "Physiology," Williams's "Principles of Medicine," Sir T. Watson's "Principles and Practice of Physio."*)

DEBILITY, *dē'bili-tē* [*Lat. debilitas, weakness or decay of strength*], is a departure from the healthy condition of the frame

Decoction

which consists of a diminution of its vital energies,—of an entering of its powers, manifested in numerous conditions and grades throughout the whole frame or more or less remarkable in particular systems or organs." It is intimately connected with the nature of most diseases, and often constitutes disease of itself. Numerous attempts have been made to distinguish or classify the different kinds of debility. The most recent writers regard it as—(1) *direct* or *primary* arising from the abstraction of stimulus or the operation of contra stimuli; such substances as directly enfeeble the organization; (2) *indirect consecutive* (2 *secondar.*) arising either from exhaustion occasioned by previous exertion or from increased exertion of an organ occupying proportionately diminution of the energy of others; and (3) *complicated debility* consisting not only of depression, but of otherwise morbid or vitiated vital action. The treatment of debility will always be in great measure dependent upon its particular form and cause, and the two are necessarily so near and vitally related that no special discussion can be laid down regarding it. There is however a particular class of remedies called for, which are in general of no benefit than any other although other articles as diffusive stimulants such as alcohol, etc., may often be used with great advantage. Change of air moderate exercise, a readable or up-to-date and pleasant society, no also in many the most beneficial means of restoring the depressed or exhausted powers of the frame by bathing and in some cases medicated baths, are likewise often of great benefit.

Décoction de lait chien [Lat. *decoquere*

Décomposition de tout poiss. un [Fr. *décomposeur*, to decompose from Lat. *componere*, composite], is the separation of the constituents of a body during putrefaction. In chemistry it is applied to any process during which a compound substance undergoes the separation or re-arrangement of its elements.

Déformation, de forme, etc. [Lat. *deformitas*, from *de*, *form*, a form], is the want of regularity of form necessary to constitute the beauty or symmetry of an object

Deformity.

In the human subject deformities may be either congenital or acquired, i.e., occurring before or after birth. The subject of congenital deformities has recently received great degree of attention, and is usually treated of under the head of *Teratology* (i.e., *teras*, a monster, and *logos*, discourse), a term introduced by Genfroy St. Hilaire. Formerly various absurd notions were entertained on this subject and a monstrosity was considered as the picture of some misfortune, the warning of divine vengeance the effect of witchcraft &c. but modern research has shown that these deformities are all to be traced to natural causes. Deformities are frequently produced by physical injuries suffered by the mother during pregnancy, and hence a strong mental impression may affect the mother physically as to transmit its effects to the fetus. Of the other class of deformities or those which are acquired after birth they may arise in various causes, in an accident from bad habits or from debility, or may occur in almost any part of the body. They commonly include the number of *twists*, and are frequently occasioned by affection of the muscles or nerves as in various cases of lameness, wry neck, squinting, &c. The most common cause of distortion however, is by reason of the bones. These sometimes deform in the earthy matter which gives them hardness or brittleness and thus are incapable of supporting the weight of the parts which they are designed to bear or supporting the mass in them, without becoming bent and distorted. From this arises the disease known as rickets (which see). The so-called lateral curvature of the spine arises from weakness in the vertebral muscles inducing a habit of resting the weight of the body more on one side than the other. Angular curvature of the spine differs entirely from the above and is occasioned, for the most part, by affection of the body of one or more of the vertebrae. Perfect rest in the horizontal position, issues and setons in the neighborhood of the diseased bone, in attendance to the general health is the treatment to be adopted in this case. Diseases of a similar kind frequently occur in the bones and joints of other parts of the body, and require similar treatment. Distortions may also arise from a variety of other causes, as rheumatism, gout, lumbus, and various chronic and local affections, but these come more properly for consideration under their own heads. Much can now be effected in the way of the cure of a limb, whether congenital or acquired, the means will necessarily differ according to the nature of the case. In general nourishing diet, steel, cod liver oil, phosphate of lime, cold bathing, sea air, and the like will be attended with marked benefit. In many cases properly directed manual exercise or movements with a

Deglutition.

view to strengthen the relaxed muscles will effect a cure. A good account of various mechanical contrivances for the relief & removal of dysphagia will be found in H. H. Bugg's "Manual of Orthoptracy".

Deglutition *dej loo tsh'um* [Lat. *deglutere*, from *deglut*] is the act of swallowing, or the passing a substance either solid, liquid or gaseous from the mouth to the stomach. It is divided into three stages. In the first the food passes from the mouth to the pharynx, in the second it passes the opening of the glottis that of the nasal, and indraws at the oesophagus, and in the third it passes through this tube and enters the stomach. The first of these is purely voluntary; the second is an action of the reflex function the third is altogether involuntary, being due to the irritability of the oesophagus which, by a series of muscular contractions and expansions, carries the substance downwards.

Delirium *de li'ru m* [Lat. from *delirio*, I rave or am frantic] is a confusion of ideas, which occurs in the progress of certain diseases, it is distinct from that of the brain. Sometime the term is employed to include every form of mental derangement but generally a distinction is made between insanity in delirium, the latter occurring principally in fever, in influenza and in those who while the former is unintended by those disorders (See INSANITY). The mind usually displays all the external appearances of health in having the digestive and nutritive functions in a sound state in the doings on the other hand all the cerebral functions are severely affected there are no correct sensations connected ideas, or passions no regular voluntary motion little or no intelligence or clear direction. The patient is always a stranger to everything that surrounds him as well as to himself. Delirium may be either violent and frantic (*delir. fr.*), as in acute inflammation of the membranes of the brain, or low and insidious (*typh. nra*), as in low fever. It supervenes on fever during any part of life. It occurs in the hot state of some intermitents but rarely unless its typhus in typhoid or contained fever until the disease has reached its height. It sometimes occurs suddenly without any previous indication but more frequently it is preceded by headache throbbing of the temples flushed and oppressed countenance &c. The patient is at first silent during the short and impotent periods of sleep & unceasingly after he is roused, becoming, while fully awake, more clear and compactly collected by degrees till a lucid interval becomes less perceptible, the individual becomes more and more incapable of reflection and mental exertion, and gradually loses the power of distinguishing the person and objects which

Delirium Tremens.

surround him. When delirium is about to terminate fatally, sensibility becomes more and more impaired until all consciousness failing seems to be lost. Inarticulate moaning succeeds to delirious incoherence, the patient loses in a great measure sight and hearing, the mouth and tongue are dry & the patient no longer complains of thirst, the pupils become scarcely contractile, black spots like flies, appear before the patient's eye, and the evacuations escape without consciousness. As delirium is rather a symptom of disease than a disease itself its treatment accords truly with that of the disease on which it supervenes and will therefore fall to be noticed under these heads.

Delirium Tremens, Delirium Eboliocytatis, or Mania a Torta, is a disease of the brain usually caused by an abuse of spirituous liquors but sometimes it is produced by great mental anxiety and loss of sleep or it may result from bodily injury or accident loss of blood &c. Delirium sometimes makes its appearance in consequence of a single debauch, but more frequently it is the result of protracted or long continued intemperance. It usually supervenes on a fit of intemperance but it not unfrequently occurs also when the habitual drunkard quits his accustomed resort. The approach of an attack is almost in inexpressible but by the patient being continually peccled by the thoughts being continually irritable with restlessness of mind and mobility of body. He becomes very nervous and uneasy, is startled by any sudden noise the opening of a door or the entrance of visitors, is restless, the hands and tongue are tremulous, he complains of inability to sleep, and if he dozes for a moment he is awakened by frightful dreams. Soon delirium manifests itself if questioned the patient often answers him enough, but if left to himself, he longs to talk or mutter, he is surrounded by frightful or loathsome animals, pursued by some one who has a design upon his life. In a while and ghastly visions though not commonly of a frightful or terrifying character the delirium is not always so occasionally the appearances in delirium ludicrous and the patient is amused by them, at other times it turns on some trivial of business, as settling of accounts or telling of money, and the patient is in a perpetual bustle, and his hands are constantly full of business. The predominant emotion with the delusions is狂乱 (madness) and in his efforts to escape from an imaginary enemy, however beguiled, of a misfortune assault, or as is more frequently the case may take his own life, and hence he requires to be very carefully watched. "The strong feature of this complaint" says Sir J. Watson, "is sleepless, a hasty but not angry or violent delirium, constant chattering, a trembling

Deltoid.

of the hands, and an eager and fitfully movement of them. The tongue is moist and creamy, the pulse, though frequent is soft, the skin is perspiring, and more or less monly the patient is drenched in sweat." The delirium continues until the patient sinks into a sleep from which he awakes comparatively rational, or dies from exhaustion. In such cases death is often sudden, the patient rising for some trivial purpose and falling in a faint, from which he never recovers, or at length rises again many times without sleep, he sinks into a state of coma, which terminates in death. This disease, however, is rarely fatal until it is where the strength of the patient has been seriously impaired by long continued excesses. **Treatment**—The great remedy is sleep and the best means of inducing this is by opium which is to be given in large doses, and frequently repeated until the desired effect follows. Sometimes it is necessary in order to procure sleep that the patient is in a very comfortable position; if the disease has been induced by over-exertion, it is necessary to allow the patient a full quantity of rest or time to recover, but this should not be continuous, but he can do with it. Chloroform has also been recommended as a most promising sleep when opium fails or before probably than either will be found to be the hydrosol of chloral (which see). Some medicine may be given in large doses to stimulate, but the nature of this remedy requires it must be given in the hands of an expert, but I might add that the stomach should not be uppermost in either milk or water &c &c and sometimes a cold shower bath will do great good. This disease is to be certainly distinguished from the first of the two, in which it has no symptoms except those in the blood, and which is recorded in the latter disease, would be of the name of *lues* in this.

Infratrad deltoid [(in frā tā dōlētōd)] is a muscle of the shoulder, which runs from the neck downward, or upward. It is called from its resemblance to the crest of a deer's horn. In Bot., the term deltoid is applied to a leaf of transverse veins.

Dentaria (See INNOMENTS.)

Dentarents, de nūl'ərəntz [Lat. dentulae, little teeth], is a name given to such medicines as are especially useful in obviating the action of acidic and stimulating matters, and this not so much by correcting or changing their nature as by involving them in a mild and viscous fluid, which prevents their acting or by covering the surface exposed to the influences. They are generally divided into two classes, mucilages and expressed oils. In this form are almonds, linseed, Arabic, several other gums, mallow, mallow root, barley, oats, wheat, rye, and starch, in the latter, mallow-

Dentition.

pearl and many foreign oils, fat, and other animal substances, including hartshorn, shavings, gelatine and isinglass, spermaceti, and wax. They are principally used in catarrh, diarrhoea, dysentery, gravel, and a few other complaints.

Dengue, or Break bone FEVER, dēng'ü, is the name of a disease that has on several occasions, recently made its appearance in the Southern states of North America and the West Indies, and is characterized as a severe inflammatory fever, accompanied with rheumatic pains in the joints and muscles, and a cutaneous eruption that usually makes its appearance upon the third or fourth day. Though very severe, it is not often fatal and usually terminates in a few days with a copious discharge of perspiration. It is regarded as a disease combined with severe rheumatic pains in the limbs and joints. It demands no special treatment beyond opiates to relieve the pain and purgatives, or an emetic, to subdue the fever.

Dens, dēn, is the Latin term for a tooth, in the plural, *denti*, whence come such English words as dent, dentation, dentate &c.

Dentifrice, dēntifris [Fr.], a substance usually in the form of powder, used as an aid in cleaning the teeth. Camphorated chalk is one of the most generally used dentifrices. Little shells and charcoal, if cleaned to fine powder are extremely efficacious. Tin oxide is also employed when teeth have become irritable. Calcined ochre much less, and that having no smell in order to give it a strong astrigency, may be given in oil, and holds firmly to impalpable colour to various tooth-powders.

DENTIST, dēntist, is one who has passed his professional diploma in the teeth [See FALTA and LOOTCHIE.]

Dentition, den tish'ün [Lat. dentitio] is the meeting or cutting of the teeth, which take place soon after birth, and are frequently attended with various disorders. At birth the teeth consist only of pulpy rudimentary substances buried in the gums; and it is not till the third or fourth month after birth that they begin to assume shape and hardness. At this period children become more irascible and fretful, they are red and swollen, accompanied with a line of itching which is manifested by the excrements with which they pick any hard substance against the gums. The salivary glands are putrefied with the gums, and there is a copious discharge of saliva. Frequently the symptoms of local irritation are accompanied by effects of a more constitutional nature. The skin becomes dry and hot the face flushed, the bowels relaxed, and the child very restless and fretful. A red rash usually also appears on the skin, called the *red spot*, and if the irritation

Dentition.

extends to the muscles of the chest there is a dry and troublesome cough. When the infant is in a tolerably healthy state these symptoms usually subside in the course of two or three weeks, but if it be in a weakly condition, they frequently lead to serious and sometimes fatal results. The mucous membrane which lines the stomach and in its tubes may be affected from that of the mouth and gripping pains nausea vomiting, diarrhoea and other disorders, may be the result. The external skin sympathizing with the internal covering, may be affected with various kinds of eruptions the air passages and lungs may also become inflamed, or the brain and nervous system may become disordered, producing convulsions epilepsy, tetanus &c. The cutting of the teeth usually takes place between the seventh and ninth month through some times it is much later. The can again become extremely sensitive but instead of now being caused by the pressure of a hard substance, it cannot endure the slightest touch it is red and swollen but pulse at the upper part which just before the tooth appears seems swelled with a thin white blister. These symptoms are a repetition of those already described with the frequent eruptions about the head or lips inflammation about the eyes and occasion by syncope movements of the mouth and jaws. These diseases are not always confined to the period of infancy, for in irritable and nervous children they sometimes manifest themselves (though usually in a less a truant form) at the eruption of the second or permanent teeth and even occasionally when the *dental symmetries* attempt to make their appearance. *Inflammation* — is the great exciting cause of these disorders is the local irritation in the gums the great object to be kept in view in the treatment is to abate or remove this irritation. Where that is considerable the gums ought to be freely lanced. As the flow of saliva and diaphoresis are efforts of nature to carry off the inflammation these are not to be interfered with unless the latter becomes excessive in which case it is to be cautiously extirpated by small doses of magnesia, or carbonato of lime. Where the bowels are confined small doses of cathartics laxatives are to be administered. If there be drowsiness and oppressed respiration irregular movements of the jaws or convulsions a leech or two to the temples and a small blister to the back of the neck, or behind the ear ought to be resorted to. Very mild opiates may sometimes be of service but they ought only to be administered with the utmost caution, and never contrasted to the more extreme emetics should also be ever used in moulding with any eruptions on the skin. Indeed, the period of dentition in children cannot be too vigilantly watched over, for there are few diseases that require

Deuteropathie

more prompt treatment than some that then make their appearance, and, if not of themselves fatal, they often lead to serious or fatal disorders.

DEOBSTRUENTS, *de ob' stru' ents* [Lat *de*, and *obstruo*, I obstruct] is a term applied to such medicines as have the property of removing obstructions in any part of the body, especially in the lymphatic system. They were formerly much used and depended upon in medical practice, but lately they have fallen into disuse. Almost the only deobstruents now employed are mercury, iodine and chlorine.

DIONONIZIR [I *de* from and *odor*, an odour] is a term applied to such substances as have the power of destroying fatal smells. One of the most common and valuable of these is chloride of lime (See *DISINFECTANTS*).

DEPLATORI *depl' at or re' plat ar' from*, and *pulse*, a hair) is a term applied to certain chemical substances employed for removing hair from the skin. Formerly it was usual to apply pitch to the parts to be depilated, and then pull it forcibly away; but this rude practice is now discontinued. Most of the depilatories to be purchased contain opium and as this is an medicinal preparation its employment is dangerous. One part of quicklime and two parts of carb. natro of soda refined and formed with water into a paste and when applied to the part, will be found to be a good depilatory.

DILUVENTS, or *COVULSIBITANTS* a general term applied to certain medicines which have the power of softening excess of action. Thus sedatives and relaxants, are employed to subdue excess of action in the heart muscle and both nervous excitement or pain.

DERMATIS (See *SKIN*)

DISMALAZIR [Lat *desquamare*, I scale off], is a name given to such medicines as cleanse and remove viscid humours adhering to and obstructing the vessels, also such applications as cleanse foul ulcers.

DETERMINATION, *detin' ration* [Lat *detinere*, I withhold], is a name given to such medicines as cleanse and remove viscid humours adhering to and obstructing the vessels to the head &c.

DEUTEROPATHIE *de-to-ro-pat' fie* [Gr *deuteros*, second, and *pathos*, suffering], is applied to an affection induced in a part through sympathy with another part originally affected as where the stomach is disturbed through a wound in the head.

Dcotoxicide.

Deutoxine, *dü-tok'sin* [Gr. *dúteros*, second, and *oxys*, acid], in Chem., the oxide of a metal containing a double dose of oxygen. The word *deotoxicide* is, however, more generally used. This remark applies to all compounds commencing with the word *deuto*.

DEVELOPMENT (See PHYSIOLOGY.)

Dextrin, *dex-trin*, a transparent brittle solid, with a vitreous fracture, formed by submitting starch to a heat of 400° F. It is Dextrin is a modification of starch, possessing the same composition, but different properties. It is, for instance, soluble in cold water, a property which renders it particularly valuable for medical etiun purposes under the name of *Bird's eye*. It has received the name of *dextrin* from causing the rotation of a polarized light from left to right. It may be always distinguished from starch by not giving a blue colour with iodine, nor flour sum, by giving a blue solution with potassium sulphite or copper.

Dabetes, dia-le-sis [Gr. *di-*, through and *básmos*, I pass] in Med. is a disease characterized by an excretive flow of urine. Medical men recognize two distinct kinds of diabetes, the *diabetes insipidus*, or *diuresis*, in which there is merely a greatly increased flow of urine, and *diabetes mellitus*, in which the urine is found to contain a large quantity of saccharine matter. The former is an uncommon disease, and differs from the latter in presenting no saccharine traces. Persons of a debilitated constitution and in the decline of life, are most subject to this disease. It commonly comes on slowly and insensibly without any apparent disorder of the system, and may exist for a considerable time before it attracts any notice. One of the most constant symptoms of this disease is an insatiable desire of thirst, and yet the quantity of urine passed daily is usually much greater than that which is judiciously drunk. A voracious appetite is also a usual characteristic of this disease. After a time the constitution manifestly suffers, the body becomes emaciated, the strength and vigour fail, the pulse is frequent and small, a slight degree of fever prevails and the skin is dry and rough. There are also usually aching pains in the back and loins, and uneasy sensations along the urinary passages. Although in too often a fatal end, it is not necessarily so, and cases have been known of a perfect recovery after the disease has been well established. In other cases it goes on by slow or rapid steps, sometimes extending over years to a fatal termination. In this last case the symptoms gradually become more and more intense, until at length the patient sinks from exhaustion, or is cut off by dropsy, consumption, or some other incurable disease. *Treatment*—Of the causes or treatment of this disease, unfortunately, little is satisfactorily known. Some prefer it

Diaphoretics.

to a diseased state of the kidneys or liver, others of the lungs, stomach, or nervous system. It may be produced by intemperate habits, or where a person tends to impair the system and produce debility, and there is believed to be a predisposition to it in certain constitutions. The measures resorted to in its treatment are rather of a palliative than a remedial nature. It is possible, however, by judicious treatment if not to remove, at least to greatly mitigate the symptoms, and to ward off the issue for a number of years. The regulation of the diet constitutes by far the most important part of the treatment, care being taken to exclude, as far as possible, all articles of food that contain sugar, or are readily converted into saccharine matter. Animal food ought therefore to constitute as large a proportion of the diet as possible. All kinds of fruit must be avoided as well as vegetables, as much as possible, particularly such as contain a large quantity of starch, as potatoes. Bread, too, should be used very sparingly, and should be well fermented in a somewhat stale. Fresh bread is preferable to the common kind. Beyond this, the treatment should be principally directed to restoring and strengthening the tone of the system by abundant exercise in the open air, and the use of tonics and such medicines as tend to soothe the nervous system. Opium in large and continued doses is said to have a very beneficial effect in this disease, and an exclusively milk diet methodically pursued in said to have been successful in effecting cures in several cases. The state of the skin is particularly to be attended to and daily abusion of the whole body in warm or cool water is recommended. The Turkish bath is believed might possibly prove useful in this disease. Iланец should also be worn next the skin.

DIACHLORIC OR LEAD PLASTER [*Im-lastrin à l'plomb*] is composed of oxide of lead in fine powder 4 lb, olive oil 1 gall and water 3½ pints, boiled gently together and kept simmering for 4 or 5 hours, constantly stirring. It forms an excellent defensive, or strapping plaster for protecting or keeping together the edges of wounds but is chiefly used as a basis for other plasters.

DIAGNOSIS, *di-ag'no-sis* [Gr. *diagnosko* I discern, or distinguish] is the art of discovering the nature of a disease, and of distinguishing it from other diseases, of a similar nature. Much depends upon a correct diagnosis of disease and the minute characteristics that frequently distinguish one disease from another; render it often a matter of great skill and delicacy. If the true nature of a disease be not ascertained, a course of treatment may be pursued that may be followed by very serious results.

DIAPHRAXTICS, *di-a-fra-k'tiks* [Gr. *diaphoros*,

Diaphragm.

I CURE THE HIGH, a name given to medicines that increase the natural exhalation of the skin. When they are so powerful as to produce actual perspiration, they are called sudorifics, the difference between the two classes being only one of degree, not of kind. They are in general used to restrain the cutaneous discharge when it has been suppressed through cold and are hence useful in catarrh, rheumatism or diarrhoea proceeding from cold. Among the more common diaphoretics are anthonry, the rhubarb root in opium, ginseng, camphor and gentian, &c. A dose of Dover's powder, with warm drinks and plenty of blankets in bed, usually produce copious perspiration, and is very beneficial in colds (See CATARRH).

Diaphragm (di'əfrahm) [Gr. *di*, apart, *phragma*, partition] is the name given to that viscus or muscle which parts the thorax or chest from the abdomen or belly. It is usually described as consisting of two membranes. The upper or diaphragmatic arises from the cartilages of the sternum, and the ends of the lower ribs on each side, in which the fibres converge, and terminate in a tendon or aponeurosis termed *crura diaphragmatis* (or crural tendons) and in inferior crural apertures. The vestiment of the lung is twofold; by a crural artery on the right side, and by an azygous vein on the left side. The crural artery divides into two branches, which run in the upper ones, and in the points the fibre ascend, sending off a ring over and decreasing to surround the crural opening, but all of the crural artery uniting with the central artery at its origin, but one now continuing on. It will be seen convex anteriorly and concave in the cavity and is situated in the tenth rib by the pleura, and in the lower by the crura or crural foramen, it is really encircling and is fixed at the crura, but the tendinous towards the crural. It presents three large openings and several smaller ones. The opening of the ventricle is quadrangular in form and is situated in the tenth rib by the pleura, and in the lower by the crura or crural foramen, it is really encircling and is fixed at the crura, but the tendinous towards the crural. It presents three large openings and several smaller ones.

The cavity of the chest is again diminished, and the air suddenly expelled. The contracting and relaxing of this muscle is not likewise it is said fit have a similar effect in increasing and diminishing the size of the abdomen, &c., and hence by its action upon the stomach and intestines, it acts in the expulsion of the faces and urine. The diaphragm is largely engaged in laughing, sneezing, coughing, sobbing,

Diarrhoea.

and other actions of the respiratory organs. Whatever occasions stoppage of the action of this muscle speedily proves fatal. It is subject to inflammation, called *diaphragmatitis*, but as this is rarely confined to the organ itself but communicated either to the pleura or peritonitum, its symptoms and mode of treatment correspond with inflammation of the e parts (see PERITONITIS and PLEURITIS).

Diarrhoea, *di-ə-roh'-ē-* [Gr. *dia*, and *rheo*, I flow] is a disease characterized by an increased discharge from the bowels, usually in a very liquid state and sometimes containing a large quantity of bile. This disease may be occasioned by anything that stimulates or irritates the mucous surface of any portion of the alimentary canal. Liquids (lo湛ent, ingesta, medicines, dressed or undressed) like or vegetable acid fruits, oily or putrid substances, frequently cause diarrhoea. Unchecked perspiration occasioned by a sudden chill compared to the body, or a draught of icy cold liquid when over heated may produce it. It is more apt to occur during the winter and autumn months than at any other period of the year. The effluvia arising from the decomposition of organic substances is a frequent cause of it. It sometimes arises from the irritation caused by worms or by some chronic disease and is a common symptom of the advanced stage of consumption. Besides looseness of the bowels, this disease is usually accompanied with griping and flatulency, together with an usual relaxation in the lower part of the abdomen. There are frequently, also, nausea and vomiting, a bitter taste in the mouth, a furred and yellow tongue, dry and flushed skin, a pale or sallow countenance, and, if not speedily checked, great emaciation. By inflammation is shewn such kinds of diarrhoea, as *crepitus*, when the faeces pass of ordinary quality but insinuately loose and copious, *bilious*, when the bile is more abundant than natural, *mucous*, when the excrements contain a quantity of mucus, *water*, in which they are almost entirely liquid and watery, and *laxative* when the food passes through the body in almost unaltered state. This is one of those diseases by means of which nature strives to get rid of impurities, and restore the system to its normal condition. Hence, when it is not very violent, and when the patient is strong, it is best to allow it to run its course, at all events for a time and even to aid it by small doses of laxatives. In any case, great care is to be taken not to stop it too suddenly. Sometimes an emetic is of great benefit in removing the cause of irritation. When it arises from obstructed perspiration, a warm bath or a dose of Dover's powder, and warm clothing in bed, will usually effect a cure. When it is occasioned by a too acid state of

Diastole.

the secretions, the great remedy is chalk mixture. Opium is also frequently employed, but it should not be used until there is reason to believe that the bowels are free of any irritating matter. Otherwise the treatment of diarrhoea is the same as that already indicated for cholera (See CHOLERA).

DIASTOLE, *di'as-tole* [Gr. *dia*, and *stole*] stretch, in Phys., is applied to the dilation of the heart and arteries and is opposed to systole, which denotes the contraction of the parts (See HEART).

DIATHERMIA, *di'ath'er-mi-a* [Gr. *diathermē*] I. di pose is applied to certain states of body predisposing it to certain diseases. Thus the scrofulous, gouty, etc., forms of diabetes denotes a certain constitution of body liable under certain favourable conditions or exciting causes to those diseases.

II. **DIATHERMIA, d. de t'her'me** [Gr. *diathermē*, *hotelōn* & *ēcītē*] in Bot., one of the two great classes into which the plants (including the flowering plants) are divided. The name *Diophyllel* was derived from the condition of the embryo perianth throughout the vast majority of plants included in the class, but, as in all other natural groups, instance occurs wherein the particular character which has suggested the name is absent. In these exceptional cases however the plants agree with the rest in other prominent characters as the structure of the stem and the plan of the flower. The presence of a pair of cotyledons in the embryo must not therefore be regarded as an essential character of the *Dicotyledoneae*, although it is presented by most of the plants in this great natural group.

DIATHERMUS, d. et al'lis [Gr. *dia* / *thermē*] a plant department of medical science which relates to the diet or ordinary food (See FOOD).

DIGESTER, di'jēs-tér [from Lat. *digerō* I. distribute, dissolve] a strong iron or copper vessel, with a steam tight lid, furnished with a safety valve, in which water and other fluids can be heated beyond their boiling points. This form of apparatus as first invented by Papin and is in consequence frequently called Papin's digester.

DIGESTION, di'jēsh'ən [Lat. *digerere*, from *digero* I carry to different parts or dissolve] in Physiol. is that process by which the food of animals is converted into chyme in the stomach, and prepared for being ultimately taken into the blood. The function of process of digestion is one of the principal of those that are directly concerned in the maintenance of life, and hence its proper performance is of the utmost importance to the individual; while, depending, as it does, upon the healthy condition of a great number of organs, it is not to be wondered at that it is liable to disorders and is productive of an endless variety of diseases under the general term indigestion.

Digestion

(See DISPERSAL.) The principal processes connected with digestion are usually represented as, — (1) Mastication, (2) maulivation (3) deglutition, (4) chymification, or the action of the stomach (5) chylification or the action of the intestines, (6) defecation, and (7) the absorption of the chyle. The operation of mastication is a very important auxiliary to deglutition, since the masticated food is broken down and mixed with the saliva the more readily and completely will it be acted upon by the mucus. Impression mastication is a frequent cause of indigestion. During this process the salivary glands yield up their contents, by means of which the dry food is moistened and rendered more fit for deglutition. The third process is the act by which the food is transferred from the mouth to the stomach (See DEGLUTITION). The alimentary matter, being propelled by the contractions of the oesophagus into the entire extremity of the stomach, is there acted upon and dissolved by the gastric juice which is secreted by glands lying in its mucous coat. This process is effected by the mechanical contractions of the stomach, by means of which the mass is kept in motion until it is reduced to chyme. When this has been entirely reduced upon, it passes through pylorus of stomach into the duodenum. The pylorus possesses a peculiar muscle that prevents any matter from passing through it but such as has been properly converted into chyme. Recent investigators have shown that the changes which the food undergoes in the stomach are essentially chemical (See Gastric juice). The process of gastric digestion is very slow. It is more than an hour before the food suffers any appreciable change, and the ordinary time required for the digestion of animal food is from three to four hours. The chyme having passed through the pylorus into the duodenum becomes mixed with the biliary juice and intestinal secretions. These juices separate it into two portions — one a milky fluid called chyle, the other the excrements portion. The chyle attaches itself to those irregular cellular folds of the intestine, the villi, of the small intestine, called the valvulae conniventes, where it is absorbed by the lacteals. The large intestine also possesses lacteals, so that, if any portion of the chyle should not have been absorbed in the small intestine, it is taken up in the large ones. The forces pass gradually from the small to the great intestine, until they reach the rectum where they are retained for some time and then discharged. The absorption of the chyle forms the last not in the process of digestion. It is as we have already seen, taken up by the lacteals, and is by them conveyed to the mesenteric glands where it is supposed to undergo some change.

Digitalis.

From thence it makes its way to the right side of the aorta, in the lumbar region, where it is finally discharged into an elongated pouch, called the receptaculum chylis. From this pouch the thoracic duct conveys the chyle upwards to the left side of the neck, where it is poured into the left subclavian vein at its junction with the internal jugular, and, being thus mixed with venous blood, is carried to the lungs and the oxygenated into new and purified arterial blood.

DIGITALIS, *dī'gī-tālēz* [Lat. *digitus*, a finger] a genus of plants belonging to the natural order *Scrophulariaceæ*. The most important species is *D. purpurea*, the purple foxglove, one of the handsomest of our indigenous plants. It is a biennial, blossoming during the months of June and July, and is found on hedge banks and the sides of hills, in dry, gravelly or sandy soil. The flowers are somewhat bell-shaped, and the remote resemblance to the fingers of a glove suggested the generic name. The foxglove is a most important medicinal plant. The leaves only are official in our pharmacopœia, but the root and roots possess similar properties. Digitalis is a red juice and diuretic, and greatly resembles tobacco in many of its properties. It is employed to induce the action of the heart in disease of that organ, in nervous irritability, in fever, and in inflammation. It is prescribed as a diuretic in disorders of all kinds, particularly when associated with constitutional debility. It is a violent poison, and great care is required in prescribing it, as its use, even in small doses, has led to fatal results, for it accumulates in the system. Dose of the leaves in powder, 1 to 1½ grain. The infusion is obtained by infusing 30 grains of the dried leaves, with two fluid ounces of boiling distilled water, in a covered vessel for 1 hour and then straining. Dose, 2 to 4 fluid drachms. The tincture, ½ ounce of the leaves in coarse powder to a pint of proof spirit, is prescribed in doses of 10 to 30 minims. In delirium tremens, and other cases of high mental excitement, it is sometimes given in much larger doses, with the best effects, but from the nature of the drug this can only be practicable in the hands of a medical man. In poisoning, the stomach should be emptied as soon as possible, and the vomitings assisted with dilute aperients afterwards astringents, containing tannin, as oak bark, or green tea with stimulants, as wine or brandy, should be administered. The active principle of digitalis is called digoxin, and is a very powerful poison. Dose, from ¼ to ⅛ of a grain.

DILATATION, *dī-lā-tā' shān* [Lat. *distension*], is the expansion or enlarging of bodies after a state of contraction or compression. It differs from extension as the latter is properly applied only to lines and surfaces the former to bodies that stand open or enlarge in all directions.

Diphtheria.

Dill (See ANETHUM).

DILUENTES, *dī-lū'ēntēz* [Lat. *diluō*, I wash away], are liquids administered to increase the fluidity of the blood, and render certain of the secretions and excretions less viscid. They likewise promote the operation of more active medicines, especially aperients and diuretics. Water is the simplest and frequently the best diluent, or it may be made more agreeable by the addition of acid or other substances, or in the form of toast-and-water. Gruel, infusion of tea, mutton, and chicken broth, beef-tea, and such-like, come under this designation. Diluents are of great use in allying the distress of patients affected with fever or other inflammatory complaints, and are often very useful in subduing the more violent symptoms of the disease and relieving the same by means of perspiration. The excessive use of fluids at meals, however, is hurtful to digestion.

DIPHTHERIA, or **DIPHTHERITIS**, *dīf-thēr'ē-tēz* [Fr. *diphthérite* from Gr. *diphthera*, a skin or membrane], is a very malignant and fatal disease of the throat which was first specially observed and described by M. Bretonneau, of Tours, in France, where it prevailed as an epidemic in 1818, though it doubtless has existed in the world from the earliest times. It subsequently broke out in other French towns and in 1817 it made its appearance in England, where it has since been, unfortunately, by no means rare, and has already caused a large amount of mortality. It is characterized by a peculiar inflammation of the mucous membranes of the throat, or pharynx, accompanied by the production of a false membrane. At first this membrane appears in the form of a white spot on the pharynx or tonsils, from which it gradually extends forwards to the soft palate and into the nostrils, and backwards into the oesophagus, sometimes into the larynx, but seldom into the trachea, producing at length suffocation. It is usually accompanied by a copious discharge from the nose and mouth and hemorrhage frequently occurs. There is usually, also, a low and dangerous form of fever, with great depression of spirits and rapid decline of the patient's strength, which is still further accelerated by his inability to take food. There is no form of the disease, however mild in appearance, that is not attended with danger, and it is sometimes fatal in 36 hours, but more frequently in from 3 to 12 days. **Treatment**.—Medical men are by no means at one as to the mode of treatment to be followed. It is generally agreed, however, that everything is to be done to support the strength of the patient, by stimulants, nutriment, and restoratives. On the first appearance, wine or brandy, in frequent doses according to the strength of the patient, should be given, with hellebore, eggs, &c. Quinine or iron is also

Dipsomania.

recommended. Some recommend the application of a solution of nitrate of silver, or other caustic, to the diseased part, but this does not seem to be attended with much benefit unless used at an early stage of the disease. Poultices or warm fomentations applied externally, and the inhalation of the vapour of hot water and vinegar, will afford some relief. The patient should be confined to bed and the temperature should be about 68° Fahr. and kept constantly moist with steam, from a boiling kettle. Ointments are frequently necessary to be given in order to prevent ulceration; and ice kept dissolved in the mouth is often a great comfort. Afterwards good nourishing food, change of air, and tonics are necessary to complete recovery. There can be little doubt that this disease is owing, in some measure, to the neglect of sanitary measures, and it is generally cured to the epochal mode and contains, though some medical men deny these statements.

DIPSOMANIA or **DIPLOMANIA** (*dip'so me'ne*) [*Gr. dipsa thirst + oin wine + mania madness*] is term recently applied to an insatiate or insatiable craving for all kinds of stimulants. Lately medical men have come to the opinion that the inveterate drunkard is to be regarded as habitually under the influence of an insane impulse. Indeed it is impossible for him to resist and which, therefore, renders him a fit subject for confinement or restraint. In 1844 the English lunacy commissioners made the justice as well as the expediency of the confinement of habitual drunkards in lunatic asylums, and this view has found many advocates. The man who attempts suicide by some summary process is liable to imprisonment, while he who slowly poisons himself in his proceed to certain destruction with impunity. He may ruin himself and his family but so that he breaks only moral laws and obligations he cannot be stopped in his downward career. The welfare of society demands some place of detention for such men, and even if an Act of Parliament cannot be obtained to sanction the necessary interference with the liberty of these misguided people yet I believe that there are many who would voluntarily enter and submit to the rules of an institution for the cure of dipsomaniacs. Patients have a morose than once told me that they would gladly submit to any treatment or surveillance but they have also said that without restraint all else would be useless, for they could not trust themselves"—(Dr Tanner, "Practices of Medicine").

DIPTEROCARPOS, *dip'ter'ō kar'pos* [*Gr. double winged vessel*, a gen. of plants belonging to the nat. ord. *Dipteracae*. Several species, as *D. turbinatus*, *costatus*, *stictus*, and *angustus*, yield an oleo-guminous substance called wood oil or Gergur oil balsam, which resembles in its properties the

Disease.

so called balsam of copaiba, and which is used for similar purposes.

DISCOURSE, *dis kur'se* [Lat. *discutio*, I destroy], is a term applied to remedies that disperse or disperse method matter.

DISEASE, *dis'ease* [Ang. Sax.] is a departure from the state of health in which the due balance between the several parts or properties of the animal frame is maintained. It is "a changed condition or proportion, in function or structure, in one or more parts of the body." Diseases of function are deviations from a standard furnished by physiology, and diseases of structure a deviation from a standard supplied by anatomy. These, however, are usually combined, for there is seldom structural disease without some disorder of function, and in many instances functional diseases are, or ultimately will be, accompanied by change of structure. The causes of disease may be either intrinsic, existing within the body, or independent of any obvious external influence, or they may be extrinsic having their origin without the body. The latter embrace all the external agencies that can operate either on body or mind as temperature air food poison, sexual immoderation, and the like. Causes of disease, however, are often present without disease ensuing, some frames being less susceptible to particular cures of disease than others. Hence physicians distinguish two kinds of causes,—predisposing and exciting, the former being circumstances which so influence the functions or structures of the body as to render it unusually susceptible to the influence of particular exciting causes—that is, of such circumstances and agents as seem to have immediately operate in producing disease, especially when in a state of predisposition. The predisposing causes of disease are said to be,—(1) Deteriorating influences, (2) excitement, (3) previous disease, (4) present disease, (5) hereditary constitution, (6) temperament, (7) age; (8) sex, (9) occupation. The exciting causes are so termed because the diseases seldom make their appearance unless they have been present; and hence they have come to be regarded in the light of excitements to it. They are divided into cognizable and non cognizable agents the former comprehending those physical and mental influences of whose existence we can take cognizance independently of their operation in producing disease, the latter such as elude our senses, and whose existence we only infer from their morbid effects. The cognizable agents are,—(1) Mechanical influences; (2) chemical influences; (3) ingesta; (4) bodily exertion; (5) mental emotion; (6) excessive evacuation; (7) suppressed or defective excretion; (8) defective cleanliness, ventilation or drainage; (9) excesses and changes of temperature. The non-

Diseases Designated.

Designable agents are endemic, epidemic, and infectious poisons, and are sometimes termed *syzygia* (Gr. *syzys*, a ferment). The classification and arrangement of diseases according to their external characters is termed *Necrology*; and that branch of science which more particularly regards the nature and progress of disease with a view to its cure, is called *Pathology* (See *Necrologist, Pathology*)—See W. Home's "Principles of Medicine."

DIABOLUS FIXED (See *FIXED DISEASES*)

DISINFECTANTS *dis-in-fek-tänts* [Lat. *dis-*, Fr. *infector*, to infect], are substances which by combining with deleterious gases or emanations, decompose them and render them harmless. The most powerful disinfectant known is chlorine which is generally employed for this purpose in the form of chloride of lime, chloride of soda or chloride of zinc. Another powerful disinfectant is permanganate of potash which acts by yielding up an equivalent of nascent oxygen. It is known in commerce as "Condy's disinfecting fluid" (See *PERMANGANIC ACID*). Carbolic acid in solution is also a powerful means of getting rid of noxious vapours. To the constant use of these and other disinfectants by the different boards of health throughout the country may be attributed the great decrease of fever and other contagious disorders amongst the poor.

DISLOCATION, *di-lo-kü-shün* [Lat. *disloco*, I pull out of place], is the displacement and separation of the natural position of bones articulated together forming a joint. It is usually occasioned by external violence, but may also, in some cases, result from disease of the joint. Dislocation is either complete or incomplete, being incomplete when the articular surfaces remain partially in contact, and complete when there is an entire separation. It is simple when there is no wound and the skin remains unbroken, compound, when there is a wound, by means of which the external air may communicate with the joint. When, besides the dislocation, there are fractures of the bones, or laceration of important organs, then this is termed a complicated dislocation. Dislocations are named either from the joint on from the bone that is chiefly dislocated, and various terms are likewise employed to indicate the direction, as upward, downward, forward, backward &c. Nearly all the bones of the human body are liable to dislocation, but some are much more so than others, as those of the shoulder, hip, elbow, ankle, &c. Generally, those joints are the most liable to dislocation that are of the greatest extent of motion. Dislocation is in most cases easily discernible, but in some parts it is extremely difficult of detection. It is attended with loss of power and motion in the part, with more or less of swelling and pain, which is

Dispensary.

increased on moving the part; the patient feels sick and faint, and there is a sensation of numbness in the part. Dislocations should be reduced as soon as possible after their occurrence, for the longer it is delayed, the more difficult will be the operation. In a short time the patient recovers from the shock of the accident; the muscles, which were at first relaxed, resume their former rigidity, and render the reduction much more difficult. Dislocations are reduced by pulling gently, yet firmly and steadily for some moments until the muscles are fatigued, and the head of the bone brought down below the level of the joint when, by being gently lifted over the edge of the socket, it falls into its place, upon the extending force being slightly relaxed. The force required is often very considerable, and sometimes it is necessary to have recourse to a block and pulleys, in which case the body is securely fixed by proper bandages to a staple in the wall, or other sufficient support. In order to overcome the violent contraction of the muscles, it was sometimes necessary formerly to weaken the patient by blood letting, emetics, &c.; but latterly chloroform has been most commonly resorted to for this purpose. After reduction it is necessary that the joint be kept in a state of perfect rest for some time, in order to allow the ruptured ligaments to unite, otherwise the accident will ever afterwards be liable to recur. When a dislocation has been left unreduced, the parts come to adapt themselves to their new situation, a new socket is formed for the head of the bone displaced, the old socket becoming absorbed or filled up. Compound dislocations are generally attended with danger, and, when occurring in the large joints, are usually fatal, or require amputation. The displaced bones should be replaced without delay, and with as little violence or disturbance as possible, and the external wound closed. Sometimes, however, it is necessary to dilate the wound, in order to effect the reduction or to remove the detached pieces if the end of the bone should have been shattered. If there is surrounding inflammation, leeches should be applied to the part.

DISPENSARY, *di-pen-sär-y* [Lat. *dispensare*, from *dispendo*, I distribute], denotes, properly, the shop or place in which medicines are made up and distributed, but it is now more commonly applied to a charitable institution for supplying medical advice and medicines gratuitously to the poor. These valuable institutions are only of recent origin, but they are now to be met with in every town of any importance either in this country or on the continent. Attached to each are generally one or more physicians and surgeons, who, besides attending at the institution, visit at their own houses those that are too ill to attend personally. There

Dispensary.

is also a resident medical officer for dispensing the medicines.

DIAPHRASATOIRE, *du per' ad-to're*, is a book containing the method of preparing the various kinds of medicine used in pharmacy. Almost every country in Europe, and many of the large cities, have their own dispensaries, which the apothecaries are bound to follow. The "New British Pharmacopœia" (ed. 1867) must now form the basis of works of this class in this country.

DIAPHRAXIA *du se' shwa* [Lat. *dis* and *seco*, I cut] is applied to the cutting or dividing of the different parts of the body in Anatomy. (See ANATOMY.)

DIARAILATION *di-ar' le shen* [Lat. *distillo* from *dis* and *stillo*, I drop] the process of evaporating a fluid by means of heat, and afterwards condensing it into a liquid. Its object is to separate one substance from others with which it may be mixed, and the possibility as to whether a substance can be distilled depends upon the temperature at which it evaporates. In chemistry distillation is performed by means of a retort or flask and a receiver.

DISTILLED Water *di stil' wa'ter* — When water is subjected to the process of distillation the result is a fluid without odour or colour with an insipid taste. In this form it is called distilled water and if evaporated to dryness, ought to leave no residue. Distilled water in its purest possible form is absolutely necessary to the chemist in his laboratory. (See AQUA MARINA.)

DISTILLED Waters — When aromatic plants are distilled along with water the combined results are usually called distilled waters. Rose-water and lavender water are examples of common occurrences.

DIATROPHIC. (See DETERIORITY.)

DIATROPIOS, *di' a-tré' o-pis* [Gr. *dioe* et *stix*] in Med., those agents which have the power of augmenting the secretion of urine. The action is beneficial whenever the system is troubled with an excess of fluids or of salts and nitrogenous substances derived from living tissues. There are some diuretics such as nitrate of potash, which act primarily upon the urinary organs, others as the mercurials which act primarily on the absorbents, and secondarily on the kidneys, and others, again, which act directly on the stomach or system generally, and indirectly on the urinary organs. Stimulant and tonic medicines have generally a diuretic action in cases of debility. The action of these remedies is promoted by drinking freely of mild stimulants. As diaphoretic (which see) and diuretics are naturally opposed to each other, whatever promotes perspiration in general is opposed to the large secretion of urine. Thus, in order to the latter, the skin should be kept cool, and the patient out of bed. Diuretics are chiefly employed to restrain the necessary action of the kidneys, to promote the excretion of droppings and

Dover's Powder.

sions, to eliminate poisonous agents from the system, and to relieve inflammatory action. The diuretics are very various in their nature, they belong to all the three kingdoms, and are all very uncertain in their action. They include the alkaloids, the alkaline and earthy salts, mercurials, and antimonials, the dilute mineral acids, and some mineral waters wine, and alcohol, digitalis, squilla, colchicum, balsam, capsaicin, juniper cartharea.

DOOR (See RUMEX.)

DOG ROSE (See ROSE.)

DOPOPO (See CORNUS.)

DOLICHOS (See MUCUNA.)

DORMEJA AMMONTACUM (See AMMONTACUM.)

DORSAL, *d' r'sal* [Lat. *dorsale*, from *dorsum*, the back] denotes something appertaining to the back, and in Anat. it forms part of the name of ligaments, arteries, &c., belonging to that region.

DORSTINIA, *dor sti' ne-d* [in honour of Theodore Dorsten a German botanist] is But, a genus of plants belonging to the natural order *Moraceæ*. The rhizomes and roots of several species have been supposed to be antidotes to the bites of venomous reptiles; those of *D. contraria* and *bassana* have been employed in medicine for their stimulant power, and diaphoretic properties.

DOSIS [Gr. *dosis*, from *didomi*, I give], is employed to denote a proper quantity of anything to be given or administered at one time and is generally applied to medicines. As the quantity of any medicine proper to be administered to an individual must necessarily depend upon his age and strength, these have to be taken into account, determining in any case the proper dose. A certain quantity, known as a *full dose*, is usually fixed upon as being sufficient for a male from 25 to 40 years of age, diminishing proportionally for persons above and below that age. Thus when the age is between 1 and 2 months, $\frac{1}{2}$ to $\frac{1}{4}$ of a full dose is sufficient, at 6 months, $\frac{1}{4}$, 1 month, $\frac{1}{2}$, 2 years, $\frac{1}{4}$; 5 years, $\frac{1}{2}$, 8 years, $\frac{1}{4}$, 12 years, $\frac{1}{2}$, 16 years, $\frac{1}{4}$, so years, $\frac{1}{2}$, 30 years, $\frac{1}{4}$, 65 years, $\frac{1}{8}$, 80 years, and upwards, $\frac{1}{16}$. Besides age, there are frequently other circumstances to be taken into account, as the constitution, habits, &c. of the individual, and usually about one fourth less should be given to an adult female than an adult male. Neither will the above rule apply to all medicines, for some generally act more powerfully on children than on adults, or vice versa. The doses which are given in this work of all the more important medicines are mostly taken from the "British Pharmacopœia," authors intended to represent average doses in ordinary cases for adults.

DOCCUS (See HYPERICUM.)

DOVER'S POWDER, or SODRUM, or IRMELOTASMA. is composed of 14 grains each of ipecacuanha and senna, in powder,

Drachm.

and 4 ounces of sulphate of potash, in powder well mixed, and passed through a fine sieve. This is one of the most valuable of our diaphoretics, and is particularly useful in the beginning of a cold. (See CATARRH.)

Dracon, or DRAM (See APOTHECARIES' WEIGHTS.)

Dracon's Blood (See CALAMUS.)

DRASTICS, dras-tiks [Gr. *drashtikos*, active, brisk, from *draso* I effect] is a term generally applied to such medicines as are very violent in their action, particularly as purgatives, such as croton oil, jalap, &c. (See CATARRHIC.)

Draught *draft* [Lat. *haustus*], is a liquid form of medicine intended to be taken at once, or at a draught whence its name.

DRAINKA, drunks [Ang.-Sax.]—In order to dilute our food and repair the constant waste of fluids that is taking place in the body, a certain quantity of liquid must be taken into the system and so necessary is this that one can bear hunger better and longer than he can do thirst. Water is undoubtedly, the natural drink of man and in a perfectly healthy condition is preferable to any other, but there are many others which in certain conditions of the body, or through habit may be taken, not only without injury, but with advantage to the health if only taken in moderation, such as alcoholic drinks. The injurious effects of the use of impure water are manifest in the extraordinary augmentation of the liability to attacks of such symptomatic diseases as may be prevalent. For the purification and preservation of water, various ingenious methods have been adopted, and one of the most approved is by means of patent filters in which the water is passed through alternate layers of sand and charcoal. Where there is reason, however, to suspect much injurious contamination, the process of boiling should never be omitted after which it may be strained and filtered, and lastly, agitated in contact with the atmosphere, in order to restore to it its natural proportion of air. The quantity of drink required varies according to the climate, the nature of the solid food taken, and individual peculiarities. Most persons generally consume too much of liquids, and this is to be particularly guarded against during meals as by diluting the gastric juice, it prevents the food from being properly acted upon. Perhaps the best time for taking drinks of any kind is an hour or two after meals as is shown by the degree of thirst which is then felt. Drinking large quantities of water is sometimes employed with beneficial effects in the cure of certain diseases. By exerting the vascular system and its connected secreting organs, it tends to remove from the blood various effete or noxious matters. On the other hand, a total abstinence from drink for two or three days is recommended as a mode of stopping fluxes and of relieving

Dropsy.

catarrhs, inflammations, and congestions. (See CATARRH.)

Drop (See MINIM.)

DROPSY, drop'sis [Gr. *hudrops*, from *hudor*, water, and *ops*, aspect or appearance], is a disease characterized by the accumulation of watery or serous fluid in one or more of the shut cavities of the body, or in the areolar tissue, or in both independent of inflammation. In a state of health, the capillaries, which ramify every part of the body, constantly pour out upon every surface, into the most minute cells as well as the great cavities, a watery fluid to moisten the parts, and thereby facilitate motion and prevent injury from friction. This watery fluid is speedily taken up by another class of vessels called the *absorbents*, which carry it back to the general circulation. When the healthy condition of these organs is impaired either from the exhalents acting too powerfully, or from the absorbents being deficient in action an accumulation of fluid takes place, either in the general cellular membrane or in the natural cavities of the body which forms dropsy. It is either active or passive. Active or acute dropsy is owing to the active action of the exhalents, in consequence of increased action of the heart, it comes on suddenly and tumultuously, and six times can scarcely be discriminated from inflammation with serous effusion. It is induced by various causes; as exposure to a cold moist atmosphere, particularly when the body is in a state of perspiration from active exercise, or long exposure to heat. The perspiration is suddenly checked and in the course of a few hours the individual becomes dropsical. Chronic or passive dropsy are occasioned by defective absorption, arising, in some measure perhaps from an unfeebled state of the absorbents, strictly and anatomically so called, but more frequently, (useful), and in some cases entirely, from undue fulness of the veins, thus venous repletion being produced almost always by some impediment to the free return of the blood to the heart as tumours, pressure on the great blood-vessels, evagination of the valves of the heart &c. When the veins are distended to a certain degree with watery fluid, the outflow of more of the same fluid through their sides is impeded or prevented, and when the distension is still greater, the aqueous part of the blood may even pass in the other direction out of the vessel. The difference between active and passive dropsy is chiefly in the rate at which the collection augments; in the one case the liquid is rapidly effused in quantity much beyond the natural amount of exhalation, in the other the exhalation goes on as usual, but the fluid exhaled is not taken back again into the circulating vessels with sufficient facility. Wherever there is a shut sac, or wherever there is loose and permeable

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areolar tissue, there we may have dropsy. There are certain parts however, where it is more generally met with than in others, and is hence distinguished by particular names thus, when in the head, *hydrocephalus*, in the chest, *hydrothorax*, in the belly, *ascites*, in the areolar tissue generally throughout the body *edema*. When the areolar tissue of a part becomes disengaged, it is said to be *edematous*. *Ostium parvum*, those parts of the body become the most loaded with serous fluid of which the areolar tissue is plentiful and loose. *Treatment*—In the treatment of this disease the first object is to get rid of the preternatural accumulation of watery fluid, the second to prevent its collecting again, for dropsy is generally a symptom or consequence of other disorders and rarely a disease of itself. In active or febrile anaemia, general blood letting is often of great advantage as it not only helps to relieve the congestion upon which the effusion depends but it tends to abate the undulation of the heart in other cases however blood letting would be very injurious from its enfeebling the patient, and as it frequently occurs from drinking or eating in poor or unwholesome food the treatment must consist in a forcible diet with tonics. In general the object is to aperient the discharge of watery fluids from one or more of the secreting surfaces of the body and it is often a matter of difficulty to determine by what surface or channel this ought to be attempted. In some cases it is best to seek to promote this discharge by way of the kidneys, in others by the mucous lining of the alimentary canal, in others by the external skin, and hence diuretics, purgatives or diaphoretics will have to be used according to circumstances. Sometimes great present relief is afforded to the patient by tapping, but it is generally only temporary, and can only sometimes be resorted to.

DROWNING, *drown'ing* [Dan. *drugne*, to drown], a suffocation produced by the immersion of the body under water, or according to some, by the exclusion of atmospheric air from the lungs by any liquid. The necessity of air to life is well known, and any exclusion of it, for even a few minutes, produces death. When a man being unable to swim falls into the water if it is not of great depth, he first goes to the bottom, but on account of the air in the lungs rendering the specific gravity of the body lighter than the water, he immediately rises again to the surface. The efforts made by him to maintain himself at the surface diminish the quantity of air in the lungs, and he again sinks to the bottom, but soon rises again; and this alternate rising and sinking may occur several times in succession. The air which is expelled from the lungs is seen to rise to the surface in the form of bubbles, and with every expire.

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then the specific gravity of the body is increased, the powers of respiration and voluntary motion rapidly diminish, and the body settles at the bottom. A feeble motion may still be perceived in the chest for a short time, but that, too, ceases and death ensues. In drowning, death is effected by the impure condition of the blood. The impure or venous blood of the system is converted into pure or arterial blood by being carried to the lungs, where it is brought into contact with the air and its impurities carried off. When, however, as in drowning, the lungs are shut out from communication with the external air, this operation cannot be carried on in pure instead of pure blood is carried through the system the brain is immedately affected, respiration and voluntary motion diminish, and at length cease. The period during which life may continue in submersion varies in different persons. In one instance bodies submerged but one minute have been found to be lifeless, and in many cases recovery has taken place after a submersion of eight or ten minutes. Occasionally animation has been restored after a submersion of fifteen or twenty minutes, or even of half an hour. In general if the body has not been in the water longer than from five to eight minutes the prompt use of the proper means will restore an animation. When the body is recovered after drowning the skin is cold and pale presenting sometimes patches of livid discoloration. The conjunctiva is usually pale the eyes half closed the pupils dilated the tongue swollen and protracted forward and the lips and nostrils covered with a mucous froth. The fingers are sometimes swollen and bladdered, and the hand grasping gravel or other substance which have been soaked in a convulsive struggle at the bottom of the water. Internally the epiglottis is found to be raised bloody foam appears in the wind pipe and in mucous passages the lungs are soft and distended, a large quantity of black fluid blood is collected in the right and left cavity of the heart and the vessels of the brain are swollen and filled with impure blood. The following plan of treating a drowned person was proposed by the late Dr. Marshall Hall—1. Place the patient instantly on the spot, in the open air except in severe weather, firmly supporting the face, neck, and chest to the breast, 2. Send with all speed for medical aid and for articles of clothing blankets &c., 3. Place the patient gently on the face with one arm under the forehead so that any fluids may flow from the throat and mouth, and without loss of time I. *Excite inspiration*—turn the patient on his side and (1) apply snuff or other irritant to the nostrils, (2) dash cold water on the face, previously rubbed briskly until it is warm. If there be no success, again lose no time, but, II. To

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immediate respiration, 5, replace the patient on his face (when the tongue will then fall forward, and leave the entrance into the wind-pipe free), then, 6 turn the body gently, but completely, on the side and a little beyond (when respiration will occur) and then on the face, making gentle pressure along the back, when respiration will take place, alternately. These measures must be repeated deliberately, oftenly, and per severingly, fifteen times in the minute only. Meanwhile, III. To induce circulation and warmth, containing these measures, 7, rub the limbs upwards with firm pressure and with energy, using hand crutches, &c., for towels, 8, wrap the patient up, covering by such other coverings as can be instantly procured, e.g. by supplying a coat, waistcoat, &c. "These rules," says Dr. Hall, "are founded on physiology, and whilst they do not give all that can be done immediately for the patient, exclude all apparatus of galvanism, the warm bath &c., as useless, not to say injurious, especially the last of these, and all loss of time in removal, &c., as fatal."

Drugs, drug [Fr. *drogueBritish Pharmacopœia*. By a subsequent Act (25 and 26 Vict. c. 32) it is declared that the "British Pharmacopœia" is intended to supersede the different "Pharmacopœias" hitherto in use in England, Scotland, and Ireland. The first edition of this work appeared in 1864, the second, much extended and improved, in 1867. "It is intended to afford," says the preface, "to the members of the medical profession and those engaged in the preparation of medicines through the British Empire one uniform standard and guide whereby the nature and composition of substances to be used in medicine may be ascertained and determined."

Druggist (See CHEMIST AND DRUGGIST.)

Drunkenness (See INTOXICATION, DYSPEPSIA.)

Duct, duct [Lat. *ducus* I lead or conduct] is used in Anst. to denote the vessels which convey the different fluids in the body, as the thoracic duct which receives the contents of the different absorbers, and discharges itself at the angle formed by the junction of the subclavian and jugular veins.

Duodenum, du-o-de-num [Lat. *duodenus*,

Gastric

consisting of twelve] in Anst. is the name given to the first portion of the small intestine, and was so called by the ancients because it was supposed not to exceed the breadth of twelve fingers; but as they dissected only animals, this does not hold true in the human subject. It is from eight to nine inches in length, and commences at the pyloric end of the stomach. It first runs upwards, backwards, and to the right, and having arrived near the neck of the gall-bladder it bends vertically downwards, and again changes to a transverse direction, thus forming two curves or angles. It is in this intestine that chyfication of the food takes place (See NIEBLERSON.)

Dura Mater (See BRAIN.)

Dust, Atmospheric dust—When a ray of sunlight enters a partially darkened apartment through any small aperture or crack in the shutters, we can distinctly see small particles of various substances familiarly called motes floating about in the track of the sunbeam and moving with greater or less rapidity according to the extent to which the air is disturbed in which they are suspended. Under ordinary circumstances, these motes or atmospheric dust, are invisible, being so minute that they can only be seen and identified in conditions that have lessened the reflection of strong sunlight from their surfaces or by the aid of a powerful microscope. But whether they are visible to us or not, they are always present in the atmosphere that we breathe. In 1816 Mr. Lyndall has recently shown by a series of interesting experiments that this atmospheric dust is not, as was generally supposed, composed of minute particles of inorganic matter like sand. He found that air passed over a flame or through a red-hot tube was entirely deprived of its particles, which are thus combustible and therefore organic. Air passed through a filter of cotton wool is also deprived of its particles, and he recommends the use of a respirator of cotton wool as a means of giving pure air to the lungs to all who are liable to be breathing impure or germ-laden atmospheres.

Dysentery, du-en-ter-e [Gr. *dusenteria*, from *dys* with difficulty, and *enteron* intes-tine] is a disease characterized by frequent mucous or bloody stools attended with gripping pains in the abdomen, straining, and tenesmus. It differs from diarrhoea in that while in the latter the stools are faecal, in this there is a retention of the natural faeces or they are expelled from time to time in small hard separate lumps termed scybala. Dysentery consists essentially in inflammation of the mucous membrane of the large intestines, and, in the acute form, stage of the disease, is attended with fever. The forms of this disease and the circumstances under which it prevails are infinitely various, and many speculations have been formed

Dysentery.

regarding it. It is now a primary, now a consecutive, and now a symptomatic disease. It has been ascribed to exposure to wet and cold to the use of unwholesome food to the agency of malaria to contagion. Generally, the most violent forms of this disease occur in warm climates and in situations where the body is exposed to alternate alternations of heat and cold, and hence there is every reason to believe that these influences are largely concerned in its production. It is doubtful however, whether the use of unwholesome food or malarious poison would induce it as a primary disease, and the general opinion among medical men is that it is not contagious. *Symptoms*—Generally one of the earliest symptoms of dysentery is an uneasiness of the abdomen soon amounting to pain of a sharp character, particularly in the umbilical region attended with an inclination to stool, and temporarily relieved by evacuation. As the disease becomes developed the relief is but transient the desire to go to stool is more frequent and impulsive; the discharge is scanty and watery, consisting either in jelly-like mucus or more commonly it is mucous and bloody (the bloody flux of old author) mixed with fibrils and membranous shreds and fragments resembling flesh. In an advanced state the stools become greenish or black and very fetid the bladder frequently sympathises with the rectum and nausea and vomiting sometimes ensue. The patient passes sleepless or dreamy and disturbed nights, and is low spirited and desponding. In fatal cases the pulse becomes very small and rapid, the features sharpen the surface grows cold, and death at length sets in. The duration of this disease is very various. In some cases it may prove fatal in a few days, or even hours, in others it may last for weeks or months. Two stages are recognized of the disease the inflammatory and that of ulceration. *Treatment*—In the inflammatory stage when the fever is high and the pain intense blood letting from the arm is generally recommended and also the local abstraction of the blood by leeches or cupping. But the former is rarely necessary in the cases which we have in this country. Poultices and fomentations should be used locally and the patient confined to bed. The diet should be carefully regulated and be nutritive but not irritative. Dover's powder should also be given as a sudorific, and profuse sweating encouraged. Purgatives are to be employed with great caution. If the colon be distended with feculent matter which it cannot discharge, then the mildest purgative, such as castor oil, should be administered, and cautiously repeated until the whole of the irritating matter is removed. If on the contrary, there is no accumulation of feculent matter, the use of purgatives is to be avoided. After the inflammatory state

Dyspepsia.

has been reduced, and the accumulated feces ejected by purgatives, the great object is to soothe the irritated membrane by opiates, and to strengthen the system by gentle tonics and a light nourishing diet. If the disease is not cured speedily by this method, but has reached the second stage and become chronic the most effectual remedies appear to be laudanum and opium given alternately and combined with such medicines as promote perspiration. The abdomen should be applied in flannel and much benefit may be derived from the employment of clysters if there be not too much tenacity to admit of the introduction of the pipe. The food should be furnishing and simple and great care must be taken during convalescence to prevent a return of improper diet and any fresh exposure to cold. (See Watson's Lectures on the Principles and Practice of Physic.)

Dyspepsia dis-pep-si-a [Gr. *dyspepsia*, from *dys* bad and *pepsis*, I concoct or digest] is a bad or difficult digestion. It is by means of digestion that the food which is taken into the stomach is converted into nutritive matter i.e. supplying the waste that is constantly going on in the system, hence anything that interferes with the due supply of nutritive matter materially affects the system and may introduce a long series of ills. The complicated series of operations by which digestion is carried on renders indigestion one of the most prevalent of the ills to which human flesh is subject—it is the prevailing malady of civilized life. "We are," says Sir T. Watson, "more often consulted about the disorders that belong to eating and drinking than perhaps about any others, and I know of no medical topic concerning which there is greater both within and beyond the profession so much ignorant dogmatism and quackery." Referring to the trich for an account of the various operations that are carried on in digestion, and a disengagement of any of which would produce indigestion, we shall here chiefly confine our attention to that which is the most frequent cause of this disorder—a faulty performance of the functions of the stomach. It is in the stomach that the principal change is effected in the food, and this is most frequently the case of dyspepsia (See Stomach). *Causes*—It may be occasioned by a deficient supply of gastric juice so that the food is not properly dissolved or from a state of too irritable condition of the muscular fibres of the stomach in consequence of which the chyme is detained too long or ejected too soon. A weak dyspeptic stomach acts very slowly, or not at all, on many kinds of food. These undergo spontaneous changes, promoted by the warmth and moisture of the stomach, gases are excreted acids are formed and perhaps the half digested mass is at length expelled by

Dyspepsia

vomiting, or it passes undissolved into the duodenum and becomes a source of irritation and disturbance during the whole of its passage through the intestines. One of the most frequent signs of indigestion is a loss of appetite, no desire for food or perhaps, even an absolute repugnance and disgust at the very thought of eating. Sometimes the appetite is capricious and uncertain or may even be morbidly craving and ravenous. Sometimes nausea comes on immediately after the food is swallowed, and sometimes without any nausea, but after the lapse of some time, the food is ejected by vomiting. There is also usually an obscure feeling of uneasiness, fulness, distension and weight in the region of the stomach, occasionally amounting to pain or even severe pain, with flatulence and eructation. Some persons suffer pain when the stomach is empty others immediately after taking food (the pain may not begin for two or three hours after a meal and then continue for some hours). Sometimes the pain comes on at uncertain intervals in the most violent paroxysms accompanied by a sensation of distension, melancholy and extreme restlessness. Costiveness is a very frequent concomitant of dyspepsia, but sometimes it is attended with diarrhoea. Among the innumerable disorders in more distant parts that are produced by dyspepsia are palpitations of the heart, irregularities of the pulse, asthma, pain in the head with the loss of mental energy and some confusion of thought. One of the worst of the occasional concomitants of dyspepsia is that state of mind which is known as hypochondriasis. There is languor, listlessness, or want of resolution with an apprehension of some great evil in the future. Such persons are particularly attentive to the state of their own health and from any unusual feeling, perhaps of the slightest kind, they apprehend great danger, or even death itself. *Causes*.—The causes that induce dyspepsia are indigestion, noxious or irritating substances taken into the stomach as food or drink such as tainted meat, decayed vegetables, unripe fruit, very acid matters, alcoholic liquors &c and even wholesome food taken too frequently or in too large a quantity, especially when its nature is very nutritious or in a very concentrated form or rendered too stimulating by being highly seasoned. The abuse of fermented and spirituous liquors is one of the most frequent causes of dyspepsia and the consumption of large quantities of fluid of any kind, particularly during meals, is very injurious. Among the more remote causes of dyspepsia, or those which affect the stomach through other organs, are wants of exercise or of pure air, intense study, or too close application to business, strong mental emotion, or exposure to a cold or moist atmosphere. *Treatment*.—In the treatment of dyspepsia it

Dyspncea.

is to be borne in mind that it is not so much medicines that will remove the present discomfort that are required, as a discontinuance of those habits which have generated the disorder. Hence one great and indispensable principle in the treatment of dyspepsia is that of restricting the quantity of food taken at any one time. The amount of food introduced into the stomach should be kept within the limits of its capacities and powers. Another very important principle is that the stomach should have time to perform one task before another is imposed upon it. Mr Abernethy always advised his patients to interpose at least six hours between one meal and another. From three to five hours ought to be allowed for the digestion of a meal and one hour more for the stomach to rest in. As different articles of food are soluble in the stomach with various degrees of readiness, it is of importance to select those articles that are soluble with least difficulty, as well as to avoid mixin, to ether in the stomach various substances which are of inferior degrees of solubility, because it is salutary to dine off one dish. Animal food is much easier of digestion in the human stomach than vegetable and a much less quantity of it is required for nutriment, while it is not so likely to generate acidity. Thus, with a moderate portion of thoroughly cooked vegetables is perhaps, the diet best suited for a feeble stomach. Of the medicines suitable for indigestion—where deficiency of appetite is the only symptom—a course of bitters as gentian or quassia, or of the mineral acids as dilute sulphuric, nitric, or hydrochloric acid for acidity alkalies are valuable, and for flatulence, carminatives, as peppermint water, will be of service. Chincalol is frequently employed as an antiseptic in dyspepsia, pepsin as being the principle to which the gastric juice is believed to owe its solvent power is valuable in aiding the action of that agent, and bismuth is useful in allaying any irritation of the mucous membrane of the stomach. As regards the use of spirituous or fermented liquors in the opinion of Sir T Watson—though some allowance must no doubt be made for custom—most dyspeptic persons would be better without any of these drinks. Finally, change of air, change of scene, change of society, usually exert a very beneficial effect in this disorder. (See Watson's 'Lectures on the Principles and Practice of Physic').

Dyspnæa [Gr. *δυσ*, with difficulty, and *πνεω*, I breathe] is an embarrassed or laborious breathing. It is owing to a disturbance of the natural and healthy relation that ought to subsist between the quantities of blood and air in the lungs. When the quantity of atmospheric air that reaches the lungs is by any means diminished, or when there is more venous blood

Bar.

sent to the lungs than can be arterialized under the ordinary modes of inspiration, then instinctive efforts are made to increase the quantity of air by increasing the number of acts of inspiration. Hence dyspnoea may arise from a number of causes; as croup, or laryngitis, diminishing the only inlet for the air; pressure upon the lung, or any other means by which its size is diminished, or it is rendered less spongy; or by increased action of the heart. The physician has to decide, in such a case, whether the heart or the lungs be at fault, or both, or neither, and to prescribe accordingly. (See ASTHMA.)

E.

EAR, ear [Ang.-Sax.], the organ of hearing, consists of three parts—the external ear, the middle ear or tympanum, and the internal ear or labyrinth. The external ear consists of an expanded trumpet-shaped cartilaginous structure, called the pinna, or auricle, which collects the sounds, and a tube which conveys these sounds to the internal ear. The pinna or auricle consists of an uneven piece of yellow cartilage, covered with integument, and fixed to the margin of the auditory canal. This canal, the *meatus auditorius externus*, or tube by which sound is conveyed from the pinna to the internal ear, or tympanum, is about $1\frac{1}{2}$ inches in length, and is formed partly by bone and partly by cartilage and membrane. Its direction is obliquely forwards and inwards, and is somewhat bent downwards towards the middle, so that it is rather higher thoro than at either extremity. The skin lining the auditory canal is very thin, and closely adherent to the cartilaginous and osseous portions of the tube. It is continued over the membrane of the tympanum in the form of a thin polliole, forming its outer covering. Around the entrance of the *meatus* are some fine hairs; and there are also cornuminous glands, which secrete the ear-wax, and open on the surface by separate orifices. The *middle ear*, tympanum, or drum of the ear, is an irregular cavity situated within the petrous bone, and interposed between the *meatus auditorius* and the labyrinth, or inner ear. It is filled with air, and communicates with the pharynx by the Eustachian tube. It is traversed by a chain of small movable bones, which connect the membrane tympani with the labyrinth, and serve to convey the vibrations communicated to the membrane tympani across the cavity of the tympanum, or the internal ear. The outer boundary of the cavity is formed by the membrane tympani, and by a small portion of the surrounding bone. This membrane is a thin, semi-transparent substance, nearly oval in form, separating the cavity of the tympanum from the bottom of the auditory

Ear, Diseases of the.

canal. The Eustachian tube is the channel through which air is conveyed from the pharynx to the tympanum. The small bones or ossicles of the tympanum are three in number—the malleus, incus, and stapes. These small bones are connected together, and with the tympanum, by ligaments, and moved by small muscles. The inner and fundamental portion of the organ of hearing is called, from its complexity, the labyrinth, and consists of three parts—the vestibule, the semicircular canals, and the cochlea. It consists of a series of cavities channelled out of the substance of the petrous bone, communicating externally with the cavity of the tympanum, and internally with the *meatus auditorius internus*, which contains the auditory nerve. Within the osseous labyrinth is contained the membranous labyrinth, upon which the ramifications of the auditory nerve are distributed. The vestibule is the common central cavity of the osseous labyrinth, and is placed behind the cochlea, but in front of the semicircular canals. These are three bony canals situated above and behind the vestibule, measuring about one-twentieth of an inch in diameter, and opening at both ends into the vestibule. The cochlea, so called from its resemblance to a snail's shell, is conical in form, and placed almost horizontally in front of the vestibule. Its length is about a quarter of an inch, and its width at the base about the same. It consists of an axis or centre; of a canal winding spirally round it for two turns and a half from the base to the apex; and of a delicate lamina contained within the canal, which follows its windings, and subdivides it into two passages. The whole inner surface of the labyrinth, including the semicircular canals and the passages of the cochlea, is lined with a thin fibrous membrane, the outer surface of which adheres closely to the bone, while the inner is covered with a single layer of epithelium, like that on serous membranes, and secretes a thin serous fluid, called the liquor cotunnii, or perilymph. This fluid fills the passages of the cochlea, and surrounds the membranous labyrinth. This last is a membranous structure, enclosed within the osseous labyrinth, and separated from its lining membrane by the perilymph. The auditory nerve, which is distributed over the different parts of the labyrinth, enters by the *meatus auditorius internus*, and divides into two branches—viz., an anterior for the cochlea, and a posterior for the membranous labyrinth.

EAR, DISEASES OF THE.—The ear, like every other organ of the body, is subject to a variety of diseases. *Earache*, or *otalgia*, is a neuralgic affection of the ear, characterized by fits of violent pain, generally coming and going capriciously, and without fever. It is distinguished from *otitis*, or inflammation of the ear, by the pain being of a shooting and not of a throbbing nature, and by its coming

Ecbalium.

on or departing suddenly or reaching at once its maximum of intensity. The causes of earache are the same as those of rheumatic affections generally, and it requires a like mode of treatment. It frequently arises from toothache and may likewise be occasioned by foreign bodies in the ear. In general earache is to be treated by warm fomentations, and poultices (or a blister blisters the swelling with a sharp purgative to be followed by tonics as quinine and iron. *Other inflammation of the ear* is characterized by an acute and increasing pain with tenderness on pressure, redness of the jaw, accompanied with fever. Some times the external ear is the seat of the disease; sometimes the internal, or will may be involved. There is frequently in jaundice confused hearing, and often the pain is so acute as to produce delirium. On examination, the meatus is observed to be more or less red, swollen, tender and dry. After a time, if the disease progresses, suppuration takes place and pus is discharged. If this happens in the inner ear, frequently the tympanum dilates and bursts so as to afford exit to the collected matter. An obstinate discharge may remain after the other symptoms have disappeared. There frequently remains also a thickening of the lining membrane of the meatus or of its canal, thus narrowing the passage, a thickening or perforation of the membranous tympanum, an obstruction of the Eustachian tube, the loss of one or more of the small bones, or curves of the mastoid apophyses and petrous portion of the temporal bone, occasioning deafness more or less complete. It is usually caused by cold or exposure to currents of cold air, impudicous bathing, violent swimming, or probing or otherwise causing irritation of the ear. It is to be treated with fomentations and poultices, and the repeated application of leeches. At the same time saline purgatives are to be administered, and other antiphlogistic measures adopted. The ear should also be frequently syringed with warm water. When foreign substances get into the ear, as is sometimes the case with children, they will generally be got out by gently syringing the ear with warm water. If not, it is better to allow them to remain as they will generally fall out after a time or on revagating the process. Accumulations of wax, which are a frequent cause of deafness, may be got rid of in the same way. *Squirters*, polypiform in the ear. These require the aid of the forceps. (See Joseph Leybush "On the Diseases of the Ear," 1860.)

*Eccremone, ec'krem'ōnē [Gr. ἔκβαλλειν, I cast out, expel], a genus of plants belonging to the nat. ord. *Cucurbitaceæ*. The species *E. officinale* is commonly called the squirting cucumber from the fruit separating when ripe from its stalk and expelling its seeds and juice with much violence. It is a native*

Elbow.

of the south of Europe and is cultivated in England. The exudate deposited from the juice of the fruit when dried constitutes the drug called claternum, or extract of claternum which is a powerful hydragogue cathartic and is frequently given in dyspepsy. It is given when pure in doses of from $\frac{1}{2}$ to $\frac{1}{4}$ of a grain. In improper doses it is an irritant poison. Claternum owes its properties to a bitter principle named claterine.

Ecthymosis, ek'hem'ōsis [Gr. ἐκ = out of, κύμα = wave, juice] is a discoloration or of the skin, occasioned by the rupture of blood vessels and extravasation of blood usually produced by falls, blows, sprains and the like. One of the most common examples of ecthymosis is a black eye. (See BRUISE.)

Ectozoon, ek'kōzōōn [Gr. εκτός without, ζωνη a term applied to parasitic animals such as lice, ticks &c. which live upon the external parts of other animals. The word is used in contradistinction to endozoon or those animals which subsist within other animals.]

*Eczema [Gr. εκτέω I boil out] is a disease characterized by an eruption of small vesicles on various parts of the skin crowded closely together and often running into each other. The vesicles burst discharging a thin humor, the fluid leaving the surface very little at a time. It is not contagious, and generally passes away after a week or ten days. There are several varieties the most important being the *E. venereum* proceeding from mucous irritants. It is to be treated by warm bathing and fomenting with ice and poultices together with mild aperients and purgatives and afterwards with balsams. Some recommend the application of glycerine to the parts or a lotion composed of water and glycerine in equal portions. Cod liver oil will also be of service.*

Effusion, ef'fūzōōn [Lat. effusio from effuso I pour out or forth] in Med., is applied to the escape of any fluid out of a vessel or cavity naturally containing it and its lodgment in another cavity, in the cellular substance or in the substance of parts. It also sometimes signifies an oozing or morbid secretion of a fluid from vessels that have not been ruptured, thus surgeons often speak of coagulable lymph being diffused on different surfaces.

Elaterites (See Momordica.)

Elbow, el'bo [Sax. elneboga] is the joint of the arm formed by the lower end of the humerus and the upper end of the radius and ulna. The lower end of the humerus is received into the hollow of the ulna, so as to produce a hinge like arrangement, and the upper end of the radius forms also a small part of the joint. The surface of the humerus in contact with the ulna is limited, internally and externally, by a prominent ridge and is hollowed out in the centre, that in contact with the radius is a

Elder

small rounded eminence which moves in the cavity of the latter. On front of the humerus above the articular surface are two depressions that receive the coronoid process and the head of the radius during flexure, and behind is a large fossa for the reception of the olecranon, or large process of the ulna in the extension of the forearm. When the bones touch, their surfaces are covered with cartilage, and their articular ends are kept in place by a number of ligaments.

Elder (See Sambucus)

ELICAMPANE (See Anise)

ELECTUARY, *el ekt' u eri* [Lat. *electio*, I make choice] in Med. is a form of preparing certain remedies such as dry powders by forming them into a soft mass by means of a syrup or honey so as to be easily taken off a spoon or the point of a knife without their naturally unpleasant taste being perceived.

ELIXIR a concrete preparation and often the source of which is not exactly known but is generally believed to be it in the Camphor communis. It is of a yellow or white colour with a camphor like odour, is it unctuous and adhesive and about the consistence of thin honey, but becoming harder and more resinous as age. It is chiefly imported from Mombay. It is used as a salve in the form of ointment. The amount of Elixirs of the Pharmacopœia is composed of 14 drachms of aloes, and 1 ounce of simple camphor.

ELPHAKTASIS, or BABABOR'S LIG., *el e fak' tasis* [Gr. *elephant* in elephant] is the name of a disease common in the East and West Indies, and is so called from the skin of the afflicted limb becoming rough, scaly and enormously thickened so as to resemble the leg of an elephant. It generally comes on in great heat of the skin alternating with profuse perspiration and violent thirst. The part becomes red, hot, swollen and painful, increases to greater and becomes a burden to the patient. Though it is the leg that is generally affected by this disorder other parts of the body are liable to its attack, but it is not usual for more than one part to be uniformly enlarged in the same individual. In the treatment of this disease in its earlier stages the use of laxatives and diaphoretics is recommended together with the application of a due amount to the part, and bandaging. In the latter stages, little can be done for its alleviation, and amputation of the part is generally discountenanced.

ELLIPTICA, *el ipt' i ka*, the name of a genus of plants of the natural *Zingiberaceæ*. The most important species is the *E. cardamomum*, or the *Malabar cardamom*, a native of Malabar. The seeds are officinal, and are aromatic and carminative. They are sold in given alone but as an adjunct to other remedies. It is best given in the form of

Emetics.

compound tincture of Cardamomum, in doses of $\frac{1}{4}$ to 2 fluid drachms.

ELEVATOR, *e lev' at or* [Lat.] is a term applied to various muscles of the body, whose action is to lift up or elevate the parts to which they are attached, as the elevator muscles of the eye, mouth &c. It is also the name given to an instrument in surgery employed for raising depressed portions of bones of the skull.

ELIXIR, *el iks' i er* [Lat. *elixir*, extract by boiling] is a name given to various medical preparations, consisting of wine, or spirits of wine, and various aromatic and bitter vegetable substances. The word is now almost gone out of use, and its place is supplied by tincture. Strictly speaking however elixirs differ from tinctures in being thicker and more opaque, and containing less spirit.

EMULSION, *em u lo' shun* [Gr. *emul* = a moistening] a term originally applied to those external applications used for softening or dissipating swellings. The word has however been extended beyond its primary meaning and is applied to oleo-acid and spirituous compounds which irritate the surface of the skin to increased action and produce all the effects of counter-irritants or which by their influence on the extirpate vital nerves and in restraining them thus stimulate and p medics.

EMULVO, *em u lvo*, [*emul* + *volv* from *el u n* I roll forth], in the rudimentary state of any organized body. In Physiol it is applied to the fetus *in utero* before the fifth month of pregnancy, from its growth resembling the bud of a plant. Hence we have *embryology* or the description of the embryo, *embryotomy* or the extraction of the embryo, *epicromion* in delivery.

EMETICS, *em e tiks*, [*em* + *etik*] a term applied to those medicines which influence the stomach in a peculiar manner, so as to invert its action and produce vomiting. This effect is caused not by the quantity of the matter introduced, but by the nature of the emetic itself. Emetics are useful when it is found necessary to relieve the stomach of some hurtful or indigestible substance, such as that have been indulged either by persons or excess of food have frequently been saved by means of emetics. In cases of fever emetics are frequently used. It is supposed that the copious secretion which they produce from the glands of the stomach and intestines has a direct curative action. They tend to render the disease milder, and should be administered as early a stage of the disease as possible. They may be advantageously repeated even at a more advanced stage, as they induce sleep and a moist state of the skin. Emetics, however, should always be given with great caution, since in cases of depression of the system, their action is to produce nausea, by which the vital power is always diminished. The

Emmenagogues.

emetics generally used consist of preparations of antimony, zinc, and copper. Squills, lobelia, ipecacuanha, and other substances are also employed. Mustard and water, diluted, is one of the mildest and most generally used emetics. Emetics should never be administered to a patient who is disposed to apoplexy, or has a tendency of blood to the head, or where he is liable to haemorrhage from any organ, or is subject to hernia. During pregnancy, also, emetics must be avoided.

EMMENOGOGUS, a term applied to such medicines as are believed to have the power of promoting the menstrual discharge when either retained or suspended.

EMOLLIENTS, *emol' yent* [Lat. *mollis*, soft] a term employed to denote those substances which are used externally for the purpose of softening the part of the body to which they are applied. They are the expressed oils, poultices, and fomentations of various kinds, liniments, ointments, embrocations.

EMPHYSEMA, *emf' se m'*, is an unnatural distension of a part caused by the presence of air in the cellular tissue. It most frequently occurs in injuries of the lungs, and investing pleura, by which the air is allowed to escape into the cellular tissue of the trunk.

EMPIRIC *em' pírik* [Gr. *empírikos* from *empírein* to experience] is probably one whose knowledge is founded on experience or observation. A certain sect of Greek physicians took this name to denote their mode of treatment as differing widely from that of the Methodists and Disciples. They died out and are preserved only in the works of their adversaries, and hence the term has long been synonymous with charlatan or quack doctor, or more generally an ignorant practitioner in science.

EMPLAISTUM (*See Plaçtum*)

EMPTYSIS [Gr.] *emf' sis* is an internal abscess of the chest, or suppuration of the pleura.

EMULSION [*Lit. emulsion*] a term formerly used to denote a milky fluid, formed by the admixture of oil and water with some other substance possessing the power of combining with both. They now generally come under the head of mixtures.

ENAMEL OF TEETH (*See Tæthæ*)

ENCERPHALITIS (*See Brain, Diseases of*)

ENCYSTED [Gr.] is applied to tumours containing of a fluid or other substance enclosed in a cyst, bag or sac.

ENDEMIC, *en-dé'mik* [Gr. *en demio*, from *en*, among, and *demis* the people], in Med., is a term employed to designate diseases peculiar to a certain class of persons, or to a particular district. Thus ague is an endemic disease in low marshy countries, the goitre in the Alps. They differ from epidemic diseases, which, without reference to locality, or class, attack many persons at the same time in the same place, and are contagious, as influenza, scarlet fever, &c.

Enteritis.

ENDOGENOUS PLANTS OR ENDODORMS, *en-dó-* *génos* [Gr. *endon*, within; *génoma*, I am formed] plants having stems which increase by the addition of new matter within. De Candolle's class *Endogena* corresponds with *Monocotyledones* of most botanists, and its essential characters are given in this work under BOTANY.

ENDOCARDITIS (*See Heart, Diseases of* THE)

ENDOSMOSIS, *en-dósmo'sis* [Gr. *endon* within; *smove*, impulsion], a term originally applied by Dutrochet to the transit of gaseous bodies or liquids through membranous substances either of an animal or vegetable origin. He found that if two fluids of unequal density, one separated by a membrane, the denser fluid will attract or draw to it the less dense. When the attraction was from without inwards he called it *endosmose*, when from within outwards, he called it *exosmose*. In animals and vegetables this remarkable action of fluids performs a very important part. Upon it depend many phenomena connected with the circulation of the blood in animals and the circulation of the sap in vegetables.

ENEMA (*See Chirurg.*)

ENTERITIS, *en-te'retis* [*(in) enter* on the intestines] in Med., is an acute inflammation of the peritoneal or external coat of the intestines. *Charteretus*—It is characterized by pain in the bowels (increased on pressure), vomiting, constipation, fever, and great prostration of strength. Though the fever in the outset may be high and the pulse strong and hard, it soon becomes small and weak or very feeble. The nausea and vomiting are often most distressing, fits of retching often continuing after the stomach has been deprived of its contents.

In full cases, as the disease proceeds the abdomen begins to swell and becomes tense and tympanitic, the pulse intermits or beats irregularly; the extremities grow cold, the features are sharpened and ghastly; cold sweat breaks out, the pain, perhaps ceases and death at length ensues. The brain is generally unaffected and the intellect remains clear but sometimes delirium occurs late in the disease. *Causes*—Inferior it may arise from various causes, particularly from cold and wet, more especially applied to the feet or legs or cold drinks when the body has been previously over heated. Hardened faecal matters, arising from indigestible substances taken into the stomach may also produce this disease. Strangulated hernia, or the involution of one fold of the intestines within another, may induce this disease, by causing a complete obstruction to the passage of the contents of the bowels. Various diseases bear a considerable resemblance to enteritis, but that which most closely resembles it is colic, which, indeed, often passes into en-

Entozoa

teritis Colic, however, is distinguished from enteritis by the absence of fever, the difference in the state of the pulse, the pain occurring more in paroxysm, and by being usually mitigated by pressure whereas in enteritis it is increased. *Treatment*—The ordinary remedies employed in inflammation must be resorted to in this disease. In very severe cases, blood may be necessary to be taken from the arm, but in general blood letting is not recommended now. Hot fomentations should be sedulously applied to the part and leeches may also be employed. The patient should be kept in bed and perfectly quiet. Opium in considerable doses will be found of great service. Great care is necessary in the administration of purgative medicines as they frequently tend to aggravate the symptoms and should not be resorted to until the inflammation has subsided. The best laxative to employ is castor oil. The disease is to be cured by removing the inflammation not by opening the bowels. Though there may not be much danger in mistaking colic for enteritis, the greatest danger may arise from mistaking enteritis for colic. Stimulants, cordials & cathartics which are of one of the greatest service in colic would naturally aggrieve the symptoms in enteritis.

Hærozœa (See *hærozœa Worms*.)

EPIDEMIC [from *epi*, upon and *demos*, the people] is a general term applied to diseases which prevail among a large portion of the people at a time or place for a certain time and then gradually disappear. The causes assigned for the prevalence of epidemic diseases are very various, and are by no means determined. "All we can say, with certainty regarding epidemics is that there must be some disordered condition of the circumstances around us, some secret power that is operating injuriously upon our system and to this we give the name of 'epidemic influence'."—(Dr Wood). The most generally assigned causes are a peculiar state of the atmospheric or climatic the season, defective ventilation or drainage and unwholesome food or drink are also among the causes that induce epidemics. Most epidemic diseases are likewise contagious and thus when once induced spread with great rapidity. During the prevalence of an epidemic it is proper to take particular care of the health attending to cleanliness in ventilation as the best means of resisting its influence.

Frida'mis (See Skin.)

Gastrum [Gr. *epi*, upon, and *gaster*, the belly], denotes that part of the body immediately over the stomach and *epigastrium* is used to denote what appertains to this part (See *ABDOMEN*).

Epi'glottis, *epi-glot-tis* [Gr. *epi*, upon, and *glotta*, the tongue], is the cartilage at the root of the tongue that falls upon the

Epilepsy

glottis, or superior openings of the larynx. In figure, it is somewhat oval, rather convex above and concave below, and covered by mucous membrane. It is attached inferiorly to the interior part of the thyroid cartilage by a strong elastic membrane. Its apex is loose, and always elevated upwards by its own elasticity. When the back of the tongue is drawn backwards in swallowing, the epiglottis is put over the aperture of the larynx, and thus shuts up the passage from the mouth into the larynx.

Epilepsy, *epi-lep-sy* [Gr. *epilepsia*, from *epi* and *lepto*, I seize], is a form of disease which receives its name from the suddenness of its attack. It is also called the *fitting seizure* from the patient, if standing suddenly falling to the ground. By the ancients it was called the sacred disease, from being supposed to be due to the influence of the gods or evil spirits. (*Chiron*)—The attack is usually sudden, without any warning. The patient may be in his ordinary health, engaged perhaps, in his usual occupation when all at once he utters a piercing scream and falls to the ground. Immediately thereafter the face becomes violently distended the head is usually drawn to one side the eyes are set and staring, or roll wildly about the coloni of the skin becomes dark and livid and the veins swollen and rigid, there is frothing at the mouth, the muscles of the lower jaw set violently producing gnashing of teeth, and frequently the tongue is thereby grievously injured the arms are sometimes thrown violently about and the lower limbs may be extended in a similar manner, while the fingers with great power clutch at whatever comes in their way. The breathing is at first heavy and difficult, but afterwards it becomes short quick and stertorous, and is often accompanied with sighing and moaning. One side of the body is commonly more agitated than another. After a longer or shorter period, the convulsive movements gradually diminish and the patient seems to recover a faint glimmering of consciousness, but the look which he casts around is stupid and heavy, and he goes off into a lethargic sleep, from which he does not awake for some hours. There is no consciousness of anything that occurred during the paroxysm. On coming out of the fit there is generally headache and always languor, and it may be days before he fully recovers from the effects of the attack. The duration of the paroxysm is usually from five to ten minutes, but sometimes several attacks follow each other in succession, and at may then be protracted for several hours. This is a severer form of epilepsy but frequently it is less severe, consisting merely of loss of consciousness, slight rigidity, and the convolution of a few muscles, and lasting only for a minute or two. Occasionally death

Epilepsy

takes place during the paroxysm, but generally it is attended with little danger, unless the patient may injure himself by falling in some dangerous position. The return of the fit is exceedingly various in different individuals several years, in some cases, intervening between the attacks, while in others they may occur every month, week, or day. When neglected, they usually become more and more severe, or recur at shorter intervals. Repeated attacks of this disease, in general, soon produce a marked change in the mental and physical character of the individual. There is a gradual diminution of the active powers, purpose becomes irrelative, the spirits are depressed, and the memory fails; the features become countenance, and impervious, and the look vacuous. The most frequent, perhaps of the consequences of confirmed epilepsy, is insanity, either in the form of acute mania or monomania following the attacks, or of gradual imbecility, without any acute seizure. Though the fit as we have said usually comes on suddenly, yet there is sometimes distinct warning of its approach. These vary, in different individuals, and may be loss of spirits, irritability, voices hoarse in the ear, floating specks before the eyes. There is however, a particular sensation which is said to be felt by some immediately before the attack, and which is known as the *aura epileptica*. It is variously described as resembling a current of air, a stream of water, or a slight convulsive tremor commencing in one of the limbs, and proceeding upwards to the head when the patient is deprived of all consciousness. Epilepsy is commonly divided into idiopathic when it is a primary disorder depending on some affection of the cerebro spinal system and sympathetic, who produced an affection in some other part of the body, as the stomach bowels liver circulating system &c. (cause) Among the causes which give rise to epilepsy are external injuries done to the brain by blows, wounds, fractures, and the like, or internal injuries by water in the brain, tumours, concretions, and polypi. Violent affections of the nervous system, sudden fright, strong mental emotions, acute pains in any part, worms in the stomach or intestines, tooth-aching, suppression of accustomed evacuations, &c., are causes which also produce epilepsy. Sometimes it is hereditary, at other times it arises from a predisposition, occasioned either by plethora or a state of debility. When it arises from hereditary predisposition, or comes on after the age of puberty, or when the attacks are frequent and of long duration it is usually difficult to effect a cure, but occurring in early life, and occasioned by worms or any other accidental cause it may, in general, be removed. Treatment—During the attack, the

Errhines.

principal thing is to see that the patient does not injure himself—especially, a piece of cork or other gag ought to be placed between his teeth to prevent injury to the tongue, the dress should be loosened about the neck and chest, the head, if possible, raised, and a free circulation of air maintained. Wherever the disease can be traced to any special exciting cause—the injuries of the head, worms, tooth-ache &c.—the treatment should be first directed to its removal. Wherever it is often the case that plethoric state appears to occasion the fits, the patient is to be restricted to a low diet, frequent purgatives are to be exhibited and everything avoided that may determine the blood to the head, and to counteract such a tendency, occasional cupping, blisters, &c., may be used. If, on the contrary, there are marks of languor and debility, a generous diet with tonic medicines and other means of strengthening the system will be proper. The cold shower bath is recommended if it can be well borne otherwise the tepid bath. The oil of turpentine, in frequent doses of 1 to 2 drachms is said to be serviceable in many cases. It is worthy of remark that when *caeca* has proceeded an attack it has sometimes been prevented by intaking its juice by means of a ligature. Stimulants particularly ethiæ, are said occasionally to keep off an attack. In this disease prudence is necessary in the choice of diet, and moderation in quantity and simplicity in carmine are material points. When the appropriate remedies are judiciously employed, and the proper regimen strictly adhered to, epilepsy is often permanently cured and the sufferer is greatly mitigated even in those forms which do not attack him. (See Ophland's Dictionary of Practical Medicine, Forbes's Cyclopaedia of Practical Medicine, Watson's Principles and Practice of Medicine.)

LISON SALT *ep'rum* in Chem sulphate of magnesia commonly known as Lison salts from the circumstance of its being largely contained in the springs in the neighbourhood of Lypsom (See MAGNESIA, *alphee of*)

1 PISTALIS OR BUILDING AT THE NOSE (See NOSEHAGI.)

EQUIVALLAT (See CHIOMATRI.)

I KNOT OR RIB (See RIBA.)

ERRHINES *o rīnēz* [Gr. *errhīnē* from *en*, in and *rhīnē* the nose], are medicines which are applied to the mucous membranes of the nostrils. The term *sternutatorum* is restricted to those which cause sneezing. Errhines may be applied in a dry, liquid, or gaseous state, they may be excellent stimulant or stimulant, protecting irritated surfaces, restraining inordinate secretion or favouring the natural mucous discharge. The following errhines most

Eructation.

commonly applied are powdered herbs—as mint, lavender, and rosemary also tobacco as snuff. Ammonia and its carbonate are much employed.

ERUPTION (See FLATULENCE, DISEASE.)

ERYTHRAS, er'ē sp'ē s̄s [Gr from *erys* I draw, and *pulas*, nra or *lupinus*, the name given to a peculiar kind of inflammation of the skin, so called from its tendency to spread to adjoining parts. It is known also as *St. Anthony's fire* or *rose-scar*, and in common language as the *Rose Character*.—It most commonly attacks the head and face, but it also sometimes occurs on other parts of the body. The local inflammation is preceded and accompanied with fever and there are also usually certain premonitory symptoms that precede the outbreak of the disease; the patient feels ill, shivery, feels lassitud and often drowsy. After these symptoms have continued for some time a red spot appears on some part of the body, its impinged with a burning heat and tingling. When attacking the face it usually makes its appearance on the bridge of the nose and rapidly extends up to the eyelids, cheeks and forehead. The redness is not intense but rather of a pale rose colour and of sawy temporally disappears but returning immediately on its removal and again returns after the cure. By the second night or morning of the third day after the commencement of the fever the rise begins to swell the eyes are completely closed and the skin of the features becomes excruciating. On the fourth or fifth day vesications a pustule on the inflamed surface and break or subside on the fifth and sixth when the redness disappears a yellowish hue and the swelling and fever begin to diminish and on the eighth day both disappear. The progress of the disease however is more insipid and less of hotter duration in the young than in the old, in those more advanced in life the tumefaction is first being somewhat fully formed on the second day and the whole terminating on the sixth or seventh while in the latter it may be protracted to the tenth or twelfth. Suppuration rarely occurs except occasionally in the eyelids or scalp. Sometimes the inflammation and swelling extend to the neck and throat and may produce suffocation. In very bad cases delirium and coma come on and death ensues from effusion on the brain. No relation of the fever takes place on the appearance of the inflammation but on the contrary it generally increases with the progress of the inflammation and only ceases when it goes away. When the complaint is mild, the inflammation and fever generally cease gradually without any evident cause. Among the just causes of the disease are sudden changes of temperature,

Erythema.

exposure to a cold and moist atmosphere, intemperance, and unwholesome articles of food. It is sometimes also induced by wounds or sores, or even a slight puncture or scratch of the skin in persons predisposed to it. It is likewise contagious and infectious and has to be strictly guarded against by means of ventilation and cleanliness in hospitals. Though the proper seat of the inflammation is the skin it frequently extends to the parts underneath. Authors usually distinguish four kinds of this disease—the phlegmonous, catarrhal, gangrenous and eruptive. The first of the three is characterized by the greatest degree of inflammation. In the catarrhal the inflammatory symptoms are less intense, but inflammation greater. It most commonly affects persons of debilitated constitution, diabetical persons and those who have been long subject to other chronic maladies. It is attended with considerable danger when it affects the face, and often terminates fatally on the seventh or eighth day. The gangrenous form most commonly affects the face, neck or shoulders, and is accompanied with symptoms of low fever and delirium which is succeeded by coma. The colour of the affected part is of a dark red and scaly relieveth appears upon the surface which frequently terminate in gangrenous ulcers. It is always a tedious, and often a fatal form of the disease. In eruptive erythema, the morbid patches appear one after the other in different parts of the body, sometimes thus travelling progressively from the head to the extremities. It is rarely attended with danger, and usually terminates in a week or ten days.

TREATMENT—In the treatment of erythema, very much depend upon the nature of the disease and the condition of the patient. If the patient be young and sanguine and the inflammation high bleeding may be had recourse to. When, on the other hand, the system is feeble tonic, a nourishing diet and even stimulants may be necessary in order to strengthen the patient. In general moderate purgatives, diaphoretics, and strict confinement to bed, are to be adopted in order to allay the local irritation. It is recommended to wash the part from time to time with warm milk and water, or better to foment it with flannels wrung out of a hot decoction of poppy heads. A solution of nitrate of silver has been employed in some cases with very beneficial results. Some surgeons recommend paring the skin over with a cold iron to protect the skin.

EUTHERMIA, er'ē tēr'mē [Gr *eruthē* red]. In Med., is a lesser kind of erythema being characterized in like manner by some degree of redness of the skin and debility of the constitution, but with little swelling and little tendency to suppuration or erosion. It is not infectious. Medical writers distinguish six varieties of this disorder

Erythrea.

It usually arises from some local irritation, or from a disordered state of the digestive organs. In the former case, it is to be remedied by the removal of the cause of irritation and the ablation of the part with warm water or some gentle stimulating lotion, as the diluted solution of subacetate of lead. In the latter case, the proper remedy for restoring the healthy condition of the digestive organs are to be employed. In general a few doses of some mild saline aperient, along with tonics and a light diet, will effect a cure.

ERYTHREIA, *er-thre'-i-a* [Gr. *eruthros*, red], a gen. of *Gentianaceæ*, consisting of herbaceous plants with erect branching stems, having opposite entire leaves, and pink, whitish, or yellow flowers. The most important species is *E. Centaurium*, the common centaury, an indigenous plant having bitter tonic properties, similar to those of gentian.

EXCHARCOTICS, *ek-kar-kot'-ik-s* [Gr. *excharēs*, I form an eschar], is a name given to those substances of a caustic nature which destroy the vitality of the part to which they are applied by burning. (See CAUSTIC (AUTXRY).)

ESSENTIAL OILS, *es-sen'-shel olz* [Lat. *essen-tia*], in Chem., a term applied to the odorous principle of plants. They are also called volatile oils to distinguish them from the fixed oils. They are extracted from different parts of plants, some plants yielding two different essential oils. Thus the orange yields two distinct essential oils, one from the flower, the other from the peel of the fruit. They are prepared in different ways, either by enfusio[n] by pressure, or by being distilled with water. The principal use of essential oils is in perfumery, but certain of them are used for flavouring, and in medicine.

ETHYL, *e-thil* [formed from the first syllables of ether and alcohol], in Chem. When spermaceti is saponified, it yields ethyl instead of glycine, as is the case with the ordinary fats. It is a white solid, fusible at 118° Fahr., and soluble in alcohol, crystallising in plates as it cools. It possesses the constitution and properties of a true alcohol, and stands in the same relation to palmitic acid that ordinary vinous alcohol does to acetic acid.

ETHER, *e-ther* [Lat. *ether*], when pure is an extremely limpid, colourless transparent fluid, very volatile, and refracting light with great power. Its odour is peculiarly powerful and penetrating if inhaled; at first producing exhilaration, and afterwards stupefying effects, followed by insensibility to pain. Its use as an anaesthetic, however, has been superseded by chloroform. It has a specific gravity of 0.724 at 55° Fahr., and boils at 40° Fahr. It is used for producing cold artificially by rapid evaporation. Its vapour is extremely dense, sinking heavily in air; great care should therefore be taken

Euphorbia.

not to pour it out with a flame below it, otherwise an explosion of a dangerous character might ensue. Mixed with certain proportions of air, it forms a highly explosive compound. It dissolves readily in alcohol, but very sparingly in water. It is much used in medicine, but its principal commercial application is as a solvent for pyroxylin in the manufacture of colloidion. Used medicinally, ether is a diffusive stimulant and anti-spasmodic, and is frequently employed in spasmodic affections, nervous debility, hysteria, difficulty of breathing, indigestion. Dose, from 20 to 60 minims. Applied externally, it produces great cold, by its rapid evaporation. The spirit of ether is formed by mixing 10 fluid ounces of ether with 1 pint of rectified spirit. Dose, 30 to 90 minims.

ETHMOID BONE, *et moïd* [Gr. *ethmoids*, from *ethmo*, a sieve, and *eidos* form because it is perforated like a sieve] a bone of the bony part of the head which is exceedingly light and spongy, consisting of many convoluted plates, which form a network like a honeycomb. It is somewhat cubical in form, and is situated between the two orbits, processes of the frontal bone, at the root of the nose. The olfactory nerves shoot down through the numerous small perforations of this bone to the organ of smell.

PEPPERMINT, *pe-p'pe-nt* [in honour of Prince Eugene, of Savoy] a gen. of trees and shrubs, of the nat. ord. *Myrtaeæ*. *P. pimenta* is the most important species. Its dried unripe fruit constitute pimento, or Jamaican pepper, a in in the familiar language allspice. The latter name is given to it because it is thought to have combined the flavours of cinnamon, clove, and nutmeg. It is used as a spice and in medicine as an aromatic stimulant and antiseptic. Its properties are dependent on the presence of a volatile oil. The pimento water is made by taking 14 ounces of bruised pimento and a gallon of water, and distilling 1 gallon. The oil is distilled in Britain from pimento, and is given in doses of 1 to 6 minims.

ERATOCRUM, *a-p' to-e-um*, a gen. of the nat. ord. *Compositæ* sub-ord. *Tubifloræ*. The leaves of *E. glutinosum* constitute a sort of matto, which is employed as a styptic. The matto used in this country is, however, derived from *A. tantha elongata* (see MATTO). *E. apapone* and *perfoliatum* are employed as antidotes to the bites of venomous reptiles, and the latter is recommended in influenza, being stimulant, diuretic, and sudorific.

EUPHORBIA, *e-for'-bo-î*, the typical gen. of the nat. ord. *Euphorbiaceæ*, consisting of about 200 species, many of which have valuable properties. The acid resin commonly known as gum Euphorbium, is the produce of certain undetermined species, the principal of which are probably *E. acutangulum*, *cannabium*, and *officinarum*. It is a dangerous emetic, cathartic, and rubefacient,

Eustachian Tube.

and produces severe inflammation of the nostrils if those who powder it do not guard themselves from the dust. It is produced from the wounded stems and collected in leather bags. In India it is said to be mixed with the oil expressed from the seeds of *Asafoetida orientalis*, and employed externally in rheumatic affection, and internally in cases of obstinate constipation. The juice of the species *R. cereifera hexagona*, and some African plants, furnish the Elixirs planct with a deadly poison for their arrows, whilst that of *R. costaricensis* serves a like purpose in the Brasil in Indians. The species *R. hirsutus* is extremely used by the peasantry of Jerry for the purpose of stupefying fish, and so powerful are its properties said to be, that a small kettle or basin filled with the bruised herb suffices to stupefy the fish for several miles down a river.

EUSTACHIAN TUBE (See EAR.)

EUSTACHIAN VALVE [a stas-ke *vn*] [after Iustinus, the celebrated anatomist], is a membranous semilunar valve, separating the right auricle of the heart from the inferior vena cava.

EXACERBATION [Gr. *exacerbo*, I become violent] denotes an increase of intensity in the symptoms of a disease occurring at intervals.

EXANTHEM [Gr. *exantheo*, I effuse *secreto*], is a *vt*, not a term denoting an *eruptio* of the skin, or rash and comprehends measles, scarlet fever, nettle rash, &c.

EXCORIATION [Lat. *excrore*, I take off the skin] denotes an abrasion of the skin.

EXCIRRUS [Lat. *excirrus*, I scrub *scirrhus*] is applied to any useless matter rejected from the body but generally to that which is discharged from the bowels.

EXCRETORY Duct is a term applied to the ducts or vessels which convey the excreted fluids from the glands.

EXERCISE (See GYMNASTICS.)

EXFOLIATION [Lat. *exfolia*, I cast the leaf], is the separation of a dead piece of bone from the living.

EXHALATION (See MARIA.)

EXIDIA *ek-sid'-e-*, in Bot., a gen. of fungi. The species *E. Auricula Jura* Jew's ear, is reported to possess astrinquent and diuretic properties when applied externally as a decoction or poultice. *E. hispida* is used in China as a styptic, and as food in soups and hashes.

EXOGENES, eks-o-jens [Gr. *exo*, without, *genome*, I am formed], in Bot., plants with stems that increase by external concentric layers—as the beech, ash, and oak. The term *Exogenes* of some botanists corresponds with the class *Dicotyledones*.

EXOCERIUM, eks-o-ze-um [Gr. *exo* with out, *zoma*, angle], a gen. of *Cocculinaceae*. The species *E. purga* is a native of Mexico, near Churcanchiquio. Its tubular roots constitute the true jalap of the *Materia Medica*, so well known as a purgative. It

Expectorants.

forms an active and safe hydrogogue cathartic, operating with rapidity and certainty, causing little irritation, and producing copious watery stools. It is thus of service in dropsical affections, and is also frequently used in counteracting constipation. Dose, 10 to 30 grains. The extract is formed by macerating 1 pound of jalap, coarsely powdered, in 4 parts of refined spirit for seven days, pressing out the tincture, filtering and distilling off the spirit. The residual jalap is then macerated for 4 hours in 1 gallon of distilled water, and afterwards expressed, strained through flannel, and evaporated by a water bath. The two extracts are then mixed and evaporated to a consistence for making pills. Dose, 5 to 15 grains. The tincture (2½ ounces to 1 pint proof spirit) is given in doses of ¼ to 2 fluid drachms. The compound powder is composed of 5 ounces of jalap in powder, 9 ounces of acid tartaric of potash, and 1 ounce of ginger in powder, mixed well together. Dose, 10 to 60 grains. Jalap also forms 3 parts in 8 of the compound powder of sciamony. Of the resin of jalap the dose is from 2 to 5 grains.

EXOMYXIS, eks-o-mik'sis [from *ex*, out of, and *omixis*, a mixt] is a term applied to a morbid excretion or hard tumour of a bone. This tumor is applied properly only to osseous tumours on the bones, though it is also sometimes applied to other morbid growths. Exomyxes are easily distinguished from other swellings by their being fixed and immovable, and at first attached with any pain or inconveniences. There are three varieties—the solid the hollow, and the foliated. There is no bone that may not become the seat of this disease, though some are much more subject to it than others; sometimes if the formation is recent, benefit may be derived from applying a compound of iodine, but, generally, the only way of getting rid of them is by the knife or saw. The operation, however, is not in all cases to be recommended, for it is sometimes attended with danger, and in general, while the exomyxis is not troublesome, it ought to be left alone.

EXTENSOR [Lat. *extendo*, I stretch], a term applied to, or forming part of the name of, muscles which serve to extend any part. It is used in opposition to *flexor*.

EXPLECTANTS, eks-plek'tants [Lat. *ex*, out of and *plicare*, the cheat], is a term applied to such substances as promote the expulsion of mucus or other matters from the air passages of the throat and chest. The agents that are used with this view are very different, and act in different ways. Vapours are the only agents that can act directly upon the organs affected, those that are taken into the stomach being only capable of acting in an indirect manner. The inhaling of the vapour of warm water, simple or mixed with certain medicinal substances, as vinegar, is very useful in

Extracts.

this way. Most medicines which, taken in large doses, act as emetics, are used as expectorants; as squills, ipacacuanha, gum ammoniacum, &c. The expectorant most commonly used in ordinary cases is the syrup of squills. All substances, also which excite respiration as the upper part of the wind-pipe, and produce coughing act as expectorants. When there is decided inflammation, the best expectorant, as such between the inflammatory state and hence mucus, or a fly-blister, applied to the chest or ventricle will be found to be of the utmost service. Again, where there is deficiency of power to expel the secreted matters, stimulants will be necessary. This it is necessary to study the circumstances of each particular case and to select that agent that is best suited for it as great harm may sometimes be done by adopting that which is unsuitable.

Extracts of plants [at *extracts*] medicinal preparations obtained in various ways from vegetable sources. In making them they consist of the simple or diluted juices of the fresh plant, at others of certain principles extracted from the fresh or dried plant by means of a menstruum capable of dissolving them. They are termed watery, alcoholic, tinctures or etherial according to the menstruum employed. The preparation of extracts requires great care. The fluid is usually evinced in a broad shallow dish, placed in a water bath at a temperature not exceeding 14° Fahr. until the extract acquires a consistency proper for forming pills. A great improvement was introduced by Mr. Baily in the mode of preparing extracts by evaporating them. Compound extracts are those which are prepared from several plants, and simple extracts from one only.

Extravasation *ekstrəvə'shən* [Lat. from *extra* without and *vas*, a vessel] is a term applied to fluids which are out of their proper vessels or receptacles. Thus an extravasation of blood takes place when an artery or vein is injured, and the blood escapes into the cellular membrane, and an extravasation of urine when in consequence of a wound or ulceration, this fluid makes its way into the cellular substance or among the abdominal viscera. Extravasation is distinguished from exudation in that, in the latter case the walls of the vessels remain entire, and the fluids escape by secretion.

Eyes, *[sing. *œye*]*, the organ of vision, is one of the most wonderful and delicate portions of the human body. It is placed within a bony cavity, termed the orbita pyramidal in form with the base downwards, and directed a little outwards and the apex backwards and inwards. The orbit contains the globe of the eye with numerous muscles, articular vessels, fat, &c. The external appendages of the eye are the eyelids,

Eye.

brows, eyelids, and lachrymal apparatus. The eyebrows or supercilia are arches of hair covering the supra orbital ridge of the frontal bone on each side, and extending from near the root of the nose to a little beyond the outer canthus of the eye. The eyelids, or *palpebrae*, are two thin curtains which cover the eye the one being inferior, and the other superior. Where they join outwardly is called the *external* and inwardly towards the nose the *internal canthus*. Along the margin of each oval is a row of stiff hairs, termed *cilia* or eyelashes, and which serve to keep external bodies out of the eye and moderate the influx of light. The lachrymal gland is situated in a small depression of the frontal bone near the external canthus and from it seven or eight canals issue called the lachrymal ducts opening on the internal surface of the upper eyelid. The lachrymal sac is a membranous receptacle, situated in the internal canthus of the eye, which communicates with the nose by means of the nasal duct. The globe, or ball of the eye is composed of membranes, or coats, humours, vessels and nerves. The *scleræna* or *conjunctiva* membrane is a delicate mucous membrane lining the internal parts of the eyelids and covering the white of the anterior part of the globe of the eye. The outermost coat of the eye is the *scleræna* [Gr. *scleros* hard] so called from its hardness. It is a strong, dense, white fibrous structure covering about four-fifths of the ball, in front which is covered by the cornea. The latter is so named from its horny appearance in the tritiate covering in front of the eye, its edges being slightly overlapped by the scleræna. It is convex anteriorly and concave posteriorly, and is composed of several laminae or layers. The choroid membrane is of a black colour and covers the internal surface of the scleræna coat with which it is loosely connected by connective tissue. Near its anterior margin it is thrown into numerous folds, produced alternately long and short and which lie upon the edge of the lens and anterior part of the vitreous humour; they are called *colliculi* or *processæ* and confine the *vitreous humor*. The *retina*, or inner coat of the eye, consists of three layers of membranes the outermost of which is in apposition with the choroid, a very delicate membrane termed the *retina* or *retina*. It is, in reality the expansion of the optic nerve and terminates at the edge of the collicular processes. The inner coat is the *functio oculosa retina*, which is vascular in texture and contains several minute branches of the central artery of the retina. The iris [Lat. a rainbow], so called from its variety of colour in different individuals, is a thin flat, circular, membranous curtain, hanging vertically in the aqueous

Eye.

humour in front of the lens, and having a central orifice, termed the pupil for the transmission of light. It divides the space between the cornea and the lens into two chambers communicating freely with each other through the pupil. The iris is muscular in structure and has great power of contracting or expanding the pupil so as to admit more or less light into the interior of the eyeball. In the anterior and posterior chambers is the aqueous humour of the eye. The crystalline lens is a transparent body, situated behind and opposite to the pupil. In form it is double convex, the posterior surface being more convex than the anterior, and it is invested by a transparent membrane, called the capsule, which contains also a small quantity of fluid, called the liquor *Morgagni*. The lens consists of concentric laminae formed upon a hard fibrous nucleus and becoming softer as they tend to the outer surface. The vitreous humour, or *corpus vitreum*, lies in the concavity of the retina occupying almost four-fifths of the eye posteriorly and being perfectly transparent. The eyeball is moved about in its orbit by six muscles, four of which are straight (recti) and two oblique—the superior and inferior. The four recti are inserted on the margin at the apex of the orbit, and are inserted into the sclerotic coat near the corner above, below, and on either side. When acting together they tend to fix and set the eye when suddenly to raise, depress, or turn it to one side or the other. The superior oblique uses with the straight muscles in moving forward to the upper edge of the orbit where it passes through a small pulley (a bone or cartilage) by which its direction is changed, and therefore is then turnedwards outwards and downwards to be inserted into the sclerotic at its posterior part. Its action is to draw the eye upwards and inwards. The optic nerve, or second pair after uniting to form the optic commissure, in which some of the fibres of each nerve cross to the opposite side separate, and enter the optic foramen at the apex of the orbit. They pass through the sclerotic coat on the inner side of and below the axis of the eye, then through the choroid, and spreading fleshy vessels, are lost or terminate in the retina. In sight then the rays of light in passing through the cornea are converged so as to pass through the relatively small pupil, and impinge upon the lens, which, by the convexity of its surface, and its greater density towards the centre, serves to converge the rays, and to cor-

Eye, Diseases of the

rect the aberration. They then traverse the vitreous humour, and strike upon the retina.

EYE, DISEASES OF THE.—This organ, from its delicacy and the numerous parts of which it is composed, is subject to a great variety of diseases, most of which will be noticed under their own names, in other parts of this work. (See AMATOsis, CATARACTA, IRRITIS, FISTULA LACRIMALIS, &c.) We shall here, therefore, only give an account of cataract, which has been referred to this place. It is derived from the Greek verb *katarrhō*, I distract or confound, and is usually defined to be a weakness or impairment of sight, produced by opacity of the crystalline lens or its capsule. Sometimes it is applied to every perceptible obstacle to vision situated in the posterior chamber, between the vitreous humour and the retina. When the disease is situated in the lens, or its capsule, it is then a true cataract; but when it consists of opaque matter deposited in front of the lens, it is termed spurious. The latter arises from inflammation and is to be treated by the usual means employed for all forms of inflammation, but no operation can be of use in such a case. Of true cataracts three kinds are distinguished—*lenticular* and *anterior*, the lens alone *capitata*, affecting capillaries and vessels *posterior*, affecting both lens and capsule. Lenticular cataracts are of two kinds,—hard and soft. The former however is more common especially among elderly persons, and is usually of an amber colour, a brownish tint and of orally dampening portion to its hardness. Soft cataract occurs in childhood and middle life, and occurs more frequently in the right than the other. A cataract may be generated by active inflammation or external violence, or it may arise from internal unknown causes. Frequently it is hereditary. The habitual examination of minute objects in a depending position of the head, by which an undue proportion of blood is thrown up into the eye, is said frequently to bring on cataract. It comes on without pain and the symptom first perceived is a dim haziness of sight as if a mist or thin film were interposed between the object and the eye. The obscurity is greatest in direct vision, the opacity being almost always first noticed in the centre of the pupil. Hence the sight is better in a weak than in a strong light because in the former case the pupil is enlarged, and admits the passage of light through the less opaque edge of the lens. Hence, for the remarkable effect produced by the application of belladonna to the eye, which has the power of dilating the pupil, and producing a temporary improvement in the sight—a means sometimes held recourse to by quacks who profess to be able to cure this disease. There is no medicinal remedy that is known to have any effect upon this disease, nor is it at all likely,

Eye, Black.

from the structure of the parts, that any such remedy exists. All palliative measures, therefore, are confined to attention to the general health of the patient, and the removal of any inflammatory symptoms that may exist along with it. The only mode of cure is actual removal by an operation; but so long as one eye remains unaffected, the operation may be delayed. There are three modes of operation employed, each of which has its advocates, and any one of which may be best according to circumstances. The first, by *ext. action* or the removal of the lens, is effected by making an incision through the cornea, as near the iris as possible, and then, by means of a needle, opening the front of the capsule, and gently removing the lens. The second method is the displacement of the lens from the axis of vision by what is called *couching* [Fr. *couchier*, to lie down] or *desecation*. A needle is inserted through the fore part of the white of the eye, and is brought to bear upon the lens, pressing it back and down into the vitreous humor, and the opaque body being thus removed sight is restored. The third method by *absorption* is effected by puncturing the front of the capsule, and thus admitting the aqueous humor to act upon the cataract, by which means it is absorbed. All these operations require great care and skill in the operator, and the action of inflammation has to be specially guarded against.

Eye, BLACK (*See Blepharitis*)
Ella-Tooth. (*See TLETTA.*)

F.

FABA, fah-bah [from Gr. *phago*, I eat], the bean of the pea family, *L. p. sativa*, sub ord. *P. II. Legacca*. From the species *F. vulgaris*, formerly regarded as *L. sativa faba* all the cultiva- tive varieties of the broad bean have been produced. The garden beans form an important article of human food, and are very nutritious.

FACE [Lat. *facies*] is the lower and anterior part of the head. It comprises the organs of the three sensoria—sight, taste, and smell, the organs of mastication, and the openings to the respiratory and digestive canals. The bones of the face are usually divided into those of the upper and lower jaw. The former comprises 15 bones besides the teeth, viz., 2 ossa nasorum, 2 ossa unguis, 2 ossa mala, 2 ossa maxillaria superiore, 2 ossa palatina, 2 ossa sphenognathica inferiora, 2 ossa triangula, and the vomer. The lower jaw consists of only one bone besides the teeth, the os mandibulae or *mandible*. The muscles of the face are numerous, and to these we are indebted for that infinite variety of expression that characterizes the human countenance, and

Feigned Diseases.

gives manifestation to the workings of the human mind.

FAINT AGE (*See NEURALGIA*)

FAECIA [Lat.], a substance obtained by bruising or grinding certain vegetables in water. It is that part which after a little falls to the bottom.

FAINTING, OR SYNCOPE *faint-ing, sin koh-puh* [Irish, *famh*, a weakening; Gr., from *sus*, with, and *kopto*, I pull down], a sudden and total or partial unconsciousness, resulting from impaired circulation of the blood through the brain, occasioned commonly by diminished action of the heart. The functions of the nervous system, respiration, and the action of the heart are either suspended or very much diminished in force. The causes of fainting are various, at any strong mental emotion loss of blood, severe pain or anything which tends to diminish the vital energy of the system. Usually the patient is first conscious of a sinking in the ears, then the sight becomes confused and all the sensations deaden, the countenance becomes death-like, and the limbs are unable to support the weight of the body, which sinks to the earth. Fainting if occurring from a diseased state of the brain or heart, or if prolonged may result in death; but if arising from any trivial cause, the patient in general speedily recovers. The patient should be laid on his back, with his head low, and his dress loosened about the neck; abundance of fresh air should be admitted to him, and cold water sprinkled on his face and neck, or ammonia applied to the nostrils.

FAILING SICKNESS (*See DILATERY*)

FALLOIAN TUBES *ful-loyay tubz*, so called after the anatomist by whom they were first described as slender tortuous canals about four inches in length proceeding from the upper angle of the uterus and terminating in the ovaries to which they serve as ducts.

FAMILY IN BOT., a synonym for order (Sc. ORDER).

FARINA, *far-i-nuh*, the Latin for flour. (*See Flours*)

FASCIAS, fas'chay [Lat. *fascia*, a bundle], is a term applied to certain membranous expansions existing in various portions of the body, and forming coverings to particular parts. They are composed either of cellular tissue more or less condensed, or of fibrous tissue the former being the *cellular fascia*, the latter the *adventitious* or *aponeurotic fascia*.

FASING (*See ABSTINENCE*)

FAT (*See CORPUSCLES*)

FAUCES *faus vees* [Lat. plur. of *fauces*], is the gorge or back part of the mouth, terminated by the gullet.

FAUFLUGS [*Lat. faulus*, a flapper, and *flugo*, I drive away] is a general term applied to medicines which are believed to possess the power of curing or alleviating fever, more particularly such as are used against a fever, as quinine.

FEIGNED DISEASES, *faigned* [Fr. *faire feindre*, to

Fel Bovinum Purificatum.

[signs], are diseases which certain persons pretend to be afflicted with, in order to avoid some duty, or in the hope of gain. The soldier, to escape the performance of duty, the amanuensis, to impose on public or private beneficence, the criminal, to avoid the infliction of punishment, most frequently have recourse to these pretences. They are sometimes, however, had recourse to when no sufficient motive can be assigned, and are difficult of detection in proportion to the skill with which they are simulated. Fodrè has observed that during the conscription in France the subject had been "brought to such perfection as to render it as difficult to detect a feigned disease as to cure a real one." The diseases most commonly feigned are epilepsy, catarrhs, convulsions, blindness, deafness, palsy, insanity, indigestion, neuralgia, rheumatism, palpitation of the heart, ulcers, &c. Vomiting, spitting of blood, diarrhoea, and ophthalmia, are also often simulated. It frequently demands very considerable ingenuity on the part of the physician to detect the knavery of such persons. The physician after ascertaining that the apparent disease is capable of being simulated, and how far it is so, should endeavor to learn what motives the patient may have for playing such a part. His intelligence should be gauged and the accidence of the disease with his age, sex, education, &c., carefully examined. He should also ascertain from the relatives or friends of the suspected person what are his physical and moral habits. "But the chief dependence" says M. Rostan "must be placed upon well directed questions, for the impostor is rarely so familiar with the symptoms of his assumed malady as not to betray himself when asked if he does not feel certain symptoms foreign to his case, or to contradict himself when questioned at different times regarding the course of his disease. Perhaps the strongest light is thrown upon these cases by an examination of the involuntary functions. In diseases in which the pulse ought to be affected (and there are few which do not affect it), its condition will often lead at once to a detection of the imposture." The cheat may often be detected by mentioning in his hearing some very severe remedy, as a red hot poker to the feet. There is generally, also, an aversion in persons feigning disease to take the proper remedies.

Fel Bovinum Purificatum, or Purified Ox Bile, is officinal, and is given in dyspepsia, as a tonic and alterative. The bile is purified by being mixed with rectified spirit, in the proportion of one pint of the former to two pints of the latter. They are agitated in a bottle, set aside for twelve hours, and the clear solution decanted and evaporated in a porcelain dish, by a water bath until of a consistence to form pills. Dose, 5 to 10 grains.

Fever.**FET** (See Foot.)

FEMORAL, fém' or-ál' [Lat. femur, the thigh]. in Anat., is applied to parts of or connected with the thigh, as, the femoral bone, or *os femoris*, the femoral artery, &c. (See THIGH.)

FENNEL (See FENICULISM.)

FERMENTATION, fer-men-ta'shun [Lat. fermentatio], in Chem., may be defined as a decomposition undergone by organic matter, through the influence of a small portion of organized matter which is in itself in an active state of generation. In all cases of fermentation certain extraneous conditions are necessary; for instance, the presence of water and a moderately warm temperature. There are three principal kinds of fermentation, —alcoholic or venous lactic or butyric, and *fermentation*. When the juices of plants or fruits containing sugar are kept at a temperature of 70° for several hours the liquor becomes turbid, and small bubbles of gas like their appearance, in common language it has begun to work or ferment. Under the combined influence of warmth, moisture and oxygen, the albuminous matter has become decomposed and a change is commenced which after it has once begun, continues until the whole of the gas has been eliminated.

FER (See FRIGGLES.)**FIBRILM and FIBRI (See IROW.)**

FEVER fe'ver [Lat. *fervere*, from *ferveo*, I am hot] is the name given to a very numerous and important class of maladies, which, however diversified in their several characteristics still present something in common in their general features. It is impossible to give a general definition that will apply to all the different varieties and forms of this class of diseases but among the features that are almost always present are spontaneous and painful languor, weakness of the corporeal and mental faculties, alterations of the secretions, altered animal heat, quickened circulation, and increased thirst. One of the earliest and most constant symptoms of fever is lassitude and it is usually attended by a painful or irksome sensation in the back and limbs. It is manifestly referable to a depressed state of the nervous energy, more particularly as regards the organic nervous system. To this depressed state of the nervous energy that weakness of the corporeal and mental powers which often precedes the evolution of the disease, and always in some degree attends it, is to be attributed. It is usually manifested more in the corporeal than in the mental faculties, particularly at first. Some of the mental powers are more affected than others, as attention and the reasoning faculties, than the imagination. Alterations of the secreting and excreting functions are among the earliest and most constant and most important phenomena of fever. The excretions from the lungs and skin are the earliest and most affected, but, besides these, the

Fever

salivary, gastric, hepatic, intestinal and urinary secretions are more or less altered as respects either quantity or quality, the alterations being somewhat different in different types and states of fever. The temperature of the body¹⁴ also variably affected in the different stages. At first it is usually below but it soon rises above its normal condition and is generally accompanied with a certain morbid sense with which it is difficult to describe. Quickened circulation has generally been regarded as one of the most essential symptoms of fever, but this feature is not constantly present, at least in some stages of the disease and it is often of less importance than other states of the vascular system and the condition of the blood itself. When indeed, the term fever is used in a general sense to denote a general disorder consequent upon or symptomatic of some local disease, and not a primary or idiopathic disease, then increased heat and accelerated circulation are the chief characteristics with which the patient is said to be with out fever, but when fever occurs as a particular disease of itself these two symptoms are seldom the most prominent and are, in this association with others which are usually more important, "first is coldness wanting in fever except occasionally in its advanced state and the appetite for food is also diminished or entirely abolished." Under men distinguish various stages or periods in the course of fever which are characterized by features more or less marked as (1) the formative or precurse stage the earliest stage of the disease being characterized by those early changes which are productive of those which constitute the developed disease, (2) the stage of invasion when the earlier symptoms of the disease still manifest themselves, (3) the period of excitement or reaction, when fever in its more literal sense began, and manifests its specific form; (4) the period of crisis when a sudden change takes place in the course of the disease known as the crisis, (5) the period of decline which succeeds the crisis and which passes into the (6) last stage—that of evanescence. Fever presents itself in a great variety of forms the sunniest of which is what is termed *ephemera* or one day's fever because it seldom lasts above twenty-four hours. It begins with chills or rigor, paleness, weariness, and a frequent small pulse with indifference to food. These symptoms are followed in half an hour or a little more, by heat of skin a flushed face, frequent hard pulse occasionally headache, and peculiar sense of fatigue restlessness, and slight soreness of the muscles. After this stage has continued for twelve or eighteen hours or at most twenty-four, great perspiration breaks out under which, in the course of little more than an hour, every essential symptom vanishes, leaving

Figure

only a feeling of exhaustion and muscular debility. This is the simplest and slightest form of fever, and though, on account of its shortness it seldom attracts much notice yet it is by no means uncommon in this country, particularly during the spring months. If such an affection be supposed to recur several times every other day, with an interval of comparative health in the intervening days a clear notion will be formed of *intermittent fever* in its most frequent and characteristic form—the tertian and from the tertian may be derived all the other forms of intermittent fever. If, in the next place the febrile state he conceived to be reinforced twice a day, or pituated by a fresh attack of rigor or chilliness with subsequent reaction before the pre-existing pyrexia had materially subsided a distinct conception may be formed of *remittent fever*. In the remittent fever most nosologists do into the only remaining primary type—*continued fever*—by supposing the fever does not become gradually less and less distinct, but others with perhaps more reason, regard them as ephemera merely prolonged, so to speak, duration as that its several stages occupy between four and nine or eleven days. In accordance with these remarks what are known as primary fevers may be divided into three classes—*continuous*, *intermittent* and *remittent fevers*. The first class comprises synochia or inflammatory fever, synchitis mixed (in nervous fever and typhus) or algæmic fever. Intermittent fevers are divided into tertian quotidian and quartan while remittent fevers comprise the marsh remittents and probably also the yellow fever. Besides primary fevers there are the eruptive class of fevers comprising the small pox, measles and scarlet fever, and the irritative fevers comprising gastric fever and gastro intestinal remittent and hectic fever (See AGREEABLE SCARLET FEVER, &c.) & (See Cope's Dictionary of Medicine, Atkins's Science and Practice of Medicine.)

FIBROUS TISSUE (*See TISSUES, MUSCLES*)
FIBULA (*See LEG*)

Ficus *f. lus* [Lat., a fig] in Bot., a gen of the nat ord *Moraceæ*, consisting of trees and shrubs, abounding in a milky juice. The most important species is *F. Carica*, the

Fig.

fig tree, supposed to be a native of Asia Minor, but now found in all the southern countries in Europe. The fruit is eaten green, and dried as a luxury in some countries, and as a common article of food in others. The finest dried figs are imported from Turkey. In consequence of their nutritive, emollient, demulcent and laxative properties, they are frequently employed in medicine. When heated and split open they form a useful application in promoting the suppuration of tumours, or boils, particularly in the mouth or gums.

(See *figs*.)

FILARIA, *fil-a-ri-a* [Lat. *filius*, a thread] a gen. of parasitic ent. common to large and small animals and infecting even certain of the molluscs. Of this family the most influential to the comfort of man is the Guinea worm (*Filaria mediterranea*) which in hot climates, invades itself under the skin of the lower members, causing excruciating pain. It has a slender red thread like body, and sometimes attains a length of six feet. It is not only in certain countries of the torrid and temperate zones in Africa and Asia, and is especially frequent on the African coast. It is extracted by tying a thread round the head when it protrudes, and rolling it round a small stick drawing the worm gradually out day by day, and rolling it round the stick till it is extracted (it is not big necessary to break it in the process).

FLACCIDUS [L., soft, flaccid] see in Pot, the fern fam., a sub ord. of *Acytioides*, sub class *Acerosae* consisting of herbs with rhizomes and stems, and of arborescent plants. The fructification consists of little somewhat roundish clusters enclosed in spores usually on the under surface, or at the margin of the fronds. The order is commonly divided into three sub classes, namely *Polypodiaceae* *Dennstaedtiae* and *Ophioglossaceae*. Several ferns have irritant rhizomes or stems which in certain parts of the world, are roasted, boiled and eaten in times of scarcity. The stems of several species possess a highly bitter ingredient, and among the properties of those of others are mucilaginous. The rhizomes of some are astringent and tonic and occasionally possess well marked anthelmintic properties. Those of the male shield fern *A. pinnatum Fase. Mac.*, are especially recommended for worms. (See *Aeropium*). The liquid extract of male fern is made by taking two pounds of fern in coarse powder, packing closely in a percolator and passing slowly through it 4 parts of ether, or until it passes cololum. Evaporate the ether on a water bath, or recover it by distillation and preserve the oily extract. Dose, 15 to 30 minims.

FILTER [Fr. *filter*] an apparatus by which fluids are separated from any solid matter held in suspension. They are of various kinds, and for different purposes, being used in straining chemicals liquids, in

Fistula.

purifying water for household use, or on shipboard for changing salt water into fresh. Household filters for purifying water, either for drinking or culinary purposes, are made in various forms. In Paris, a large quantity of the river water is purified by passing it through boxes at the bottom of which is a layer of charcoal between two layers of sand. Filtered river water although not so agreeable to drink as spring water is still well suited for other purposes. The conversion of salt water into fresh is very important and depends mainly upon distillation. There are many forms of apparatus for this purpose, and they are of great service on board ship where the absence of fresh water often causes great misery. Dr. Normandy's method of converting salt water into fresh is largely adopted by the Admiralty and the large steamboat companies.

LINGERIE (See Hand)

FISH, by ANTHONY'S (See *Leydig's*)
FISH constitute an important as well as in a valuable article of food for man. The flesh of fish is not so digestible as that of birds or quadrupeds, and hence it is not so nutritious, but it contains more flesh-forming material and usually also a larger quantity of unctuous matter. To be thoroughly who (sic) and nutritious, the fish should be as fresh as possible and dressed quite simply. Boiling is in general the most wholesome way of cooking fish. However in such butter and sauces may add to the flavor, they undoubtedly impair the digestibility of this kind of food. The whiting, haddock, sole, flounder and turbot are probably the most easily digested and the most nutritious of the class. Cod is not so digestible but is very nutritious. Salmon, etc. herrings, pickards and sprats, abound in oil and are in consequence difficult of digestion, and to be avoided by the dyspeptic.

FISTULA, *fi-stu-la* [Lat., a pipe or reed], is a long and sinuous ulcer having a narrow opening, sometimes leading to a larger cavity, and which has no disposition to heal. The most common form of this disease is the *fistula in ano*, the sinus extending into the cellular substance about the anus, or into the rectum itself. It is the result of abscesses formed in the cellular tissue around the rectum and which, having burst or been opened, are prevented from healing by the action and irritation of the sphincter ani. They are divided into two kinds, complete, and incomplete or blind; the former having two openings or outlets, the one externally, the other into the rectum; the latter having only one and being divided into blind external and blind internal, according as the opening is external or internal. This disease is commonly attended with intense pain, especially when passing the faeces, and there is an irregular discharge of purulent matter, which is sometimes mixed

Flannel.

with blood. Sometimes a cure will be effected by attending to the general health, and the injection of some astringent lotion, as solution of sulphate of zinc (40 grains to a pint of water). Failing this, it will be necessary to make a complete division with the knife of the whole of the parts between the fistula and the bowel, and the edges of the wound kept apart by lint, in order to allow the cavity to fill up by granulation. *Fistula lacrymatis* is a disease of the lacrimal sac, caused by an obstruction to the flow of tears along the nasal duct. The symptoms of this disease are a watering of the eye, with a dryness of the corresponding nostril, a distension of the lacrimal sac, and a discharge of muco-purulent fluid mixed with tears, from the puncta lacrymalia, when the sac is compressed. In the earlier stages of this disease, when there is only a distended state of the lacrimal sac, a cure may be effected by the application of leeches and fomentations to the eye, with the use of astringent ointments to the edges of the lid. In the more advanced stages, however, where there is inflammation and suppuration of the sac, or where a fistulous opening has been formed in it, by the escape of purulent matter an operation becomes necessary for its removal. This is effected by making an incision with a sharp-pointed knife into the lacrimal sac and then passing a probe downwards into the nasal duct, after which a silver instrument called a style is inserted, and allowed to remain until the inflammation, which produced or accompanied the abscess, has subsided. *Salivary fistula* is a fistulous aperture in one of the salivary ducts, opening externally, and through which the saliva escapes. It is generally caused by a wound, and if this be recent, a cure may be effected by merely bringing together and uniting the edges of the wound; but if of some standing, a free canal ought to be formed for the discharge of the saliva into the mouth. In *fistula in perineo*, which is almost always accompanied with a stricture of the urinary passage, the fluid passing out of the external opening of the sinus, an operation is necessary, which will require the aid of a competent surgeon. Fistulas generally require very skilful treatment, and are often extremely difficult to close, and though not in themselves dangerous, they are not unfrequently attended with fatal results, arising out of the constitutional depression, which they occasion by the long-continued wearing pains, and the drain upon the system, in consequence of the protracted discharge. *Fistula in ano* is often observed in consumptive patients.

Fistular (*See Clotournis*)

FLATULENCY, *flat-u-les-ee* [Lat. *fatus*, a blast], in Med., is a morbid collection of gases in the stomach and bowels, commonly arising from indigestion, or from over-indulgence in certain kinds of vegetable food.

Flour.

When, from any weakness in the digestive powers, food remains in the stomach in an undigested state, fermentation takes place, and gases are formed. Flatulence is usually symptomatic of other diseases,—indigestion, cold, cholera, hysteria, or nervous debility. For its cure, carminatives, tonics, and aperients are resorted to, and strict attention to diet is necessary, taking only such food as is light and easy of digestion, and avoiding all oleaceous vegetables, peas, beans, and filamentous fruits. Weak brandy-and-water, as a beverage at dinner, is also very beneficial. When the pain is excessive, hot applications to the stomach and friction will frequently afford considerable relief. (*See Carminatives, Diaphoria, Colic, &c.*)

FLEA, flesh [Sax. *fæc*], a compound substance, constituting a large portion of every animal, and consisting of the softer solids, as distinguished from the bones and fluids (biomically considered). Flesh consists of fibrin in a coagulated form, permeated by at least three times its weight of water and fluid, consisting partly of blood and partly of substances secreted from it. The soluble matters consist chiefly of albumen, the soluble salts of the blood, two animal principles called creatine and inosite, and phosphoric, lactic, butyric, acetic, and formic acids. The salts consist of the phosphate of potash, muriate, and lime, and a small quantity of chloride of sodium. (*See Muscle, Tissue*)

FLESH BRUSH is a brush used for rubbing the surface of the body in order to excite the cutaneous circulation. Its use is very advantageous where the circulation is languid.

FLEXOR, flex'-or [Lat. *flexto*, I bend], is the name of certain muscles whose office it is to bend the parts into which they are inserted. The antagonistic muscles are termed extensors.

FLOCCULATION, *flok-u-lay' shun* [Lat. *foculatio*, from *foculus*, a lock of wool], in Med., is a term applied to the picking in the bed clothes, which is sometimes observed in the last stages of fever and other violent complaints, and which is always regarded as a symptom of great danger.

Flour, *flour* [originally *flouer*, Fr. *flour*], the finely ground meal of wheat, and of any other corn or cereals which has been reduced to powder in a mill. There are several varieties of flour, depending upon its fineness, or the amount of bran which it contains. (*See Bran*) The component parts of flour are starch, gluten, sugar, gum, bran, and water, the prime element being starch. No substance is more adulterated than wheat-flour, and there are several modes of detection, the best of which is the specific-gravity test, as a vessel which contains one pound of wheat flour will contain nearly a pound and a half.

Flower.

of any other. Some chemical tests are also very good. Firstly, nitric acid, which has the effect of colouring wheat-flour of a fine orange-yellow, while it does not affect the colour of fecula or starch; secondly, muriatic acid, which colours bread *farinæ* wheat-flour a deep violet, but dissolves fecula and starch into a light viscous fluid, which is decomposable by the admixture of any alkali. Another test is the amount of ash that is left after the sample is burnt. Wheat-flour yields on the average 0.8 per cent.; rye-flour, 1.0; bean and pea-meal, 3; and linseed-meal, 10 per cent. of ash, by which means adulteration can be detected.

FLOWER. *fleur* [Fr. *fleur*], that portion of a plant which is formed by the union of all the organs which contribute to the formation of the seed. In common language, the word is used to convey the idea of the portion in which the gayest colours are found. A complete flower consists of the essential organs of reproduction, enclosed in two particular envelopes which protect them. These essential organs are called the *pistil* and *stamens*. The floral envelope is termed *calyx* and *corolla*. The extremity of the poduncle, or pedicel, upon which the parts of the flower are placed, is called the *thalamus* or *receptacle*. (See BOTANY.)

FLUORIC ACID. (See HYDROFLUORIC ACID.)

FLUX. *fluxus* [Lat. *fluxus*, from *flu*, I flow], is applied to any protuberant fluid evacuation from the body, but more especially to those that proceed from the bowels. It is frequently applied to diarrhoea, and dysentery was long known as the bloody flux. (See DIARRHOEA, DYSENTERY.)

FENICULUM. *fe-nik'-u-lum* [from Lat. *fanus*], the fennel, a gen. of the nat. ord. *Umbellifera*, formerly placed under *Anethum*. Two species—namely, *F. vulgare*, the common fennel, and *F. dulce*, the sweet fennel—are much used in this country as potherbs, and for garnishing dishes. The former grows wild on rocks and walls, particularly near the sea; the latter is frequently regarded as a cultivated variety of the same plant. The fruit of the *F. dulce* is officinal, and is imported from Malta. It is stimulant, carminative, and is sometimes employed in flatulence, dyspepsia, colic, &c. Fennel water is made by taking 1 pound of the fruit bruised and 2 gallons of water, and distilling 1 gallon.

FERRUS. *fe-ru-s* [Lat. *fero*, I bring forth], is applied to the child in the uterus from the fifth month of the pregnancy to the time of birth. Previous to that time, it is commonly called the *embryo*; but these terms are rather arbitrary, and the one is frequently used for the other. (See PHYSIOLOGY.)

FOLLICLE. *fol'-le-kle* [Lat. *folliculus*], in Anat., is applied to a simple gland, consisting merely of a hollow vascular membrane and an excretory duct, as the mucous

Food.

or sebaceous follicles. In Bot., it is applied to a superior one-celled, one or many-seeded fruit, dehiscent by the ventral suture only; and consequently one-valved.

FOMENTATION. *fo-men-ta-tion* [Lat. *fomentatio*, from *foco*, I bathe], in Med., is the application of heat and moisture to a part, by means of flannel or other substance wrung out of hot water, in order to relieve pain or to stimulate the surface. Sometimes the water is medicated with various substances, and occasionally other liquids, as oil or milk, are employed. Care should be taken to wring the cloths well, so as to prevent the fluid from running about the patient and rendering him uncomfortable. They should be applied as warm as they can be borne, and renewed as soon as they begin to feel cold. To enable them to retain the heat still longer, they are often covered externally with oiled silk.

FOMES. *fom'-es* [Lat. *fomes*, fuel], is a term applied to such substances as are believed to be capable of receiving, preserving, and conveying contagious affluvia, as wool or woollen clothes.

FOOD. *food* [Sax. *fed*, food], is a term employed to denote those substances which are used for sustaining animal life or for the purpose of reproducing the ever-wasting tissues of animal bodies. Of the elementary bodies, only a small proportion enter into the constitution of animals; and the substances included in this small proportion are the only ones required to be present in food. Out of about sixty-five elements, only oxygen, hydrogen, nitrogen, carbon, sulphur, phosphorus, chlorine, sodium, potassium, calcium, magnesium, iron, and fluorine, are absolutely necessary. Albumen, fibrine, and casein, which occur both in animals and vegetables, together with vegetable gluten, furnish oxygen, hydrogen, nitrogen, and carbon. Animal flesh, eggs, milk, corn, and various other vegetable productions, contain one or more of these principles. Food containing a large proportion either of sugar, starch, or organic acids, introduces carbon, hydrogen, and oxygen largely into the system. Oleaginous alimentary substances contain carbon with a little oxygen and hydrogen: this class of substances includes fat, suet, butter, oily seeds, such as nuts, and fatty foods, such as liver, &c. Flesh, blood, and bones, used as food, supply phosphorus to the system; the flesh of fishes is particularly rich in phosphorus; and in the shape of phosphates, it exists in the juices of many edible vegetables. Sulphur is introduced into the system from the fibrine of flesh, from albumen, from the casein of milk, gluten, &c. Chlorine and sodium exist in nearly every variety of animal food, and in the shape of common salt are taken separately with nearly all kinds of food. Potassium is found in various kinds of food, both animal

Food.

and vegetable, in milk, in the juice of flesh, and in nearly all inland plants. Calcium is not only obtained from animal and vegetable food, but also from drinking water, which usually contains sulphate and carbonate of lime in solution. Magnesium is generally found along with calcium, and traces of zinc have been observed in milk, blood, &c. These simple bodies are, however, not capable of being directly assimilated and converted into tissue, they must be previously in combination, and their assimilation depends upon certain chemical decompositions and physiological processes. The number of elementary substances in combination differs in different articles, thus, water contains two elements—oxygen and hydrogen; sugar starch fat, &c., contain three, casein of milk contains five, and albumen and fibrine contain six. Baron Liebig, who has given much attention to this subject has divided all kinds of food into two classes—the substances which do contain nitrogen and those which do not. The first class which is sometimes called nitrogenous or albuminous is useful in forming blood, flesh &c. it is, in fact nutritious food. The second, or non-nitrogenous class, are the respiratory organs. Thus in very cold climates where more exercise is required in order to sustain the vital heat, no oxygen is consumed, and consequently more carbon is required in the food. Hence it will be observed, that in countries as Siberia, Lapland, &c., large quantities of non-nitrogenous substances such as fat oil &c., are used by the inhabitants in food. In the temperate zone a mode to mixtures of nitrogenous and non-nitrogenous food is used, while in the tropics, where the system requires oxygen in particular fruits and vegetables form the principal food. Although the theories of Liebig have not remained unchallenged, his works on the subject are considered of very high value (See Liebig's "Researches on the Chemistry of Food"). The various elementary substances, says Dr. Letheby, "contain at least four classes of constituents, each of which performs its own assigned function in the living animal economy. If the substance contains nitrogen it seems most fitted for the nourishment of tissue, and has been called plastic or nitrogenous; if it is deficient in nitrogen

it appears to undergo combustion in the body and is called a non-nitrogenous or a respiratory element of food (hydro carbons), if it is fatty in its nature it performs the double duty of maintaining animal warmth and of assisting in the assimilation of nitrogenous compounds, and lastly, if it is saline in its quality, it goes to build up the solid textures of the animal frame, and aids the important work of carrying new

Food.

materials into the system, and old or effete matter out of it." In general, it is considered that a full-grown man requires about one twentieth part of his weight in food, solid and liquid, in 24 hours—from $\frac{1}{2}$ to $\frac{1}{4}$ pound being solid, the rest liquid. The carboniferous should be in the proportion of about three to one, in weight, of the nitrogenous. The following table is given by Dr. Parkes of the nutritive value of food of different kinds in 100 parts—

Articles of Food	Wt.	Wt.		C. per cent.
		Subst.	Wt.	
Meat without Bone	74	16	9	
Lb. of Meat	73	14	14	
Bread of avg. qual. (wheaten)	40	8	74	52
Starch . . .			100	
Lat . . .			100	
Peas . . .	15	24.4	26	49
Potatoes . . .	74	15	0.6	49
Rice . . .	10	3.8	0.8	82.2
Milk . . .	87	4.7	3.7	5.2
M. size . . .	13.5	0.9	6.7	64.5

In the preparation of food for eating much depends upon the way in which it is cooked. As all the nutritious juices of meat are soluble in cold water, it is necessary when preparing boiled food to place the meat in boiling water in the first place. This scalds the肉膜 on the surface, and forms a crust or shell, which prevents the escape of the nutritious juices. However, the object is to make soup, the meat should be put into cold water, and gradually raised to the boiling point. In roasting or broiling meat, the first application of heat should be vigorous and rapid, in order to coagulate the albumen and form a crust so as to retain the juices, as in boiling. In the process of roasting, the cellular tissue is converted into soluble gelatin, and the fat is melted out of its component cells. Boiled meat is less digestible than either roast or boiled, as it contains more empyreumatic oil. Frying is the most unwholesome form of cooking, as it is mostly performed with the assistance of heated oil or fat which is decomposed during the operation. Smoking, pickling, and salting meat, not only harden the animal textures but, in the case of salting, the food is rendered less nutritious, as a large quantity of albumen, soluble phosphates, lactic acid, potash, creatine, and creatinine are abstracted in the brine. Very few vegetables are roasted, they are, as a general rule, boiled. Those which contain saccharine matter, such as carrots, beetroot, parsnips, &c., are best cooked by

Foot

steam, as boiling water dissolves out a large quantity of their nutritious ingredients. Vegetables, however, which contain much starch, as potatoes should be boiled. By boiling, the granules of the starch are ruptured and partially dissolved and any volatile oils which may be present are expelled. All kinds of flesh are not equal with regard to their nutritive value. Veal, for instance, is totally different from beef. It contains a smaller quantity of the alkalies, and there is 15 per cent more phosphoric acid than is necessary for the formation of salt; it contains also little of the fibres of flesh and proportionately more of the fibres of blood, which is less digestible than the former. Veal is rich in gelatin which is not nutritious and will contain any quantity of fat if it has contained very little iron. In all these points it is the reverse of beef. Hard-boiled eggs have little or no nutritive power and the same may be said of boiled fish, the soup of which is generally thrown away. In order to make up the necessary deficiency of nutritive matter in veal, eggs and fish, vegetables should be taken with it; celery contains 18 per cent salidine 74 per cent, and cabbage sprouts no per cent of their dry weight of salt all a 64 and alkali-humic earths. Vegetal food in general contains a large proportion of iron. If the human body iron is present in the blood, the bile, & other places. When the blood is deficient in iron the physician prescribes either iron itself or chalybeate waters. The presence of this metal is therefore necessary in food. Prolonged abstinence from fruits, meat, & vegetables, &c., & a big quantity of tea, coffee, & articles which they contain produce this effect; thus lemon juice is used by sailors with good effect on long voyages. Amongst the condiments used for flavouring food we must include cayenne pepper, black pepper, and various spices. They owe their action on to the presence of a volatile oil. The volatile oils of fennel, thyme, parsley, anise, caraway, horseradish, mustard and water cress stimulate the system, but do not incorporate the volatile. Condiments and sauces (which are usually fluid mixtures of condiments) in time, generally wear on the organs which they at first stimulate. The only exceptions are salt and vinegar. Dr Beaumont, a surgeon in the United States army, made some interesting experiments upon a Canadian who had been shot in the left side. In the process of healing, an aperture was left by means of which Dr Beaumont was able to observe everything that took place in the stomach (See his Experiments and Observations on the Gastric Juice, and the Physiology of Digestion by Dr Beaumont, Pereira's "Treatise on Food and Diet").

Foot, foot [Ger *fuss*, Lat *pēs*], in that

Foramen.

part of the lower extremity below the leg, with which we stand and walk. It is composed of three series or groups of bones — the tarsal or hindermost the metatarsal, which occupy the middle portion and the phalanges which go to form the toes. The tarsal bones are seven in number. Above, they are connected with the tibia and fibula bones of the leg, and below form the heel and the hinder part of the instep. They are the *astragalus*, which articulates with the tibia and fibula; the *calcaneus* or bone of the heel; the *tarsometatarsal* or scaphoid bone on the inner side of the foot, articulating with the astragalus; the *os cuboides* on the outer side of the foot articulating with the os calcis; and the three cuneiform or wedge-shaped bones (the internal, middle and external) in front of the scaphoid bone near the middle of the foot. The metatarsal bones are five in number and belong to the claws of long bones. They are connected posteriorly with the tibia and anteriorly with the phalangeal bones. These bones form the anterior portion of the instep and their anterior end form the balls of the toes. The phalangeal or bones of the toes are four in number, three to each toe except the great one which has only two. The upper one, which are the longest and largest are named *terminalia*; the next the *middle* and the most anterior the *ungual* phalanges. The bones of the foot are particularly those that compose the tibia and fibula, which are firmly connected together so that they are not liable to be displaced and those parts where they articulate with one another being covered with a tolerably thick layer of highly elastic cartilage they become less durable, yet more elastic. They are bound together in various directions by a number of ligaments one of the principal of which is the plantar ligament which is of great strength and passes from the under surface of the heel bone near its extremity forward to the ends of the metatarsal bones. The foot, naturally, a beautiful structure is usually much interfered with in civilized life, as to be deprived of much of its beauty and even of its utility. Its movements are impeded by its being confined in tight fitting boots while in place of the boots being conformed to the shape of the feet the feet are made to conform to the shape of the boots. The consequence of which are corns, bunions, cold feet and a number of other evils from which so many suffer in the present day. Attention was called to this subject a few years ago by Professor Meyer, of Zurich who published a pamphlet entitled, "Why this? Show pictures," a contribution to applied Anatomy, which has been translated into English, and is well worth a perusal.

FORAMEN for'ə mən [Lat. 'a hole] is a term applied to certain holes or openings of

Forceps.

the human body, more particularly of the skeleton; as the various foramina of the skull. The *foramen ovale* is a passage or communication between the two auricles of the heart in the foetus.

FORCEPS, *for'-sep's* [Lat.], is the name given to certain instruments of various shapes, according to the purposes they are intended to serve; but the principle of all is that of a pair of pincers, with two blades, either with or without handles. They are much used in surgery, especially for taking hold of substances that cannot be conveniently laid hold of with the fingers. Certain kinds are used for tooth-drawing; others for securing the mouths of arteries, in order to their being tied; others are used for cutting; others in lithotomy, or for extracting foreign bodies from wounds; and others in midwifery, for aiding delivery in difficult cases.

FORMULA, in Chem., is an expression of the composition of a substance by means of symbols. The formulae of bodies may be either *empirical* or *rational*. An empirical formula is one giving the elements contained in a body, without reference to their arrangement. For instance, the empirical formula of crystallized sulphate of copper would be $Cu_2O \cdot SH_2$, but the rational formula, showing its composition, would be $CuO \cdot SO_4 \cdot 5H_2O$. Formulae are the most convenient way of expressing the decompositions which take place when certain substances are mixed, a few lines of symbols serving for pages of explanation. (See CHEMISTRY.)

FOWLER'S SOLUTION is a solution of the arsenite of potash, introduced into practice by Dr. Fowler, of Stafford, as a substitute for the quack medicine called tasteless ague drop. It is the most commonly used of arsenical preparations; is alterative and anti-periodic, and, after quinine, is the best cure for ague. It is also of great use in all periodic disorders, and in diseases of the skin. It is prepared by heating, till dissolved, 80 grains each of arsenious acid and carbonate of potash, in half a pint of distilled water. When cold, add 5 fluid drachms of compound tincture of lavender and distilled water, to make 1 pint. It is to be given cautiously, in doses of 3 to 5 minima, gradually increased to 20, two or three times a day.

FRESCOLOVE. (See DIGITALIS.)

FOX-SKINS. (See VITRA.)

FRACTURE, *frak'-shur* [Lat. from *frango*, I break], is the term applied to broken bones. This is one of the commonest accidents to which one is liable, especially in very cold weather, when the bones are very brittle, and in certain conditions of the bone themselves. Description.—Fractures are divided into simple, compound, comminuted, and complicated. Simple fractures are those in which the fracture does not communicate with the external air. These

Fracture.

are by far the most common, and usually affect the shaft of long bones, this part being that most subject to injuries of this description. Compound fractures are those in which one or more bones are broken, and the fracture communicates with the external air by means of a wound in the soft parts. Comminuted fractures are those in which the bones are broken into several portions; while complicated fractures are such as are complicated with some other injury, as a wound of the principal artery of the limb. Fractures are also distinguished as transverse, oblique, or longitudinal, according to their direction. A transverse fracture is usually much more easily treated than an oblique; for the parts when placed in apposition, may be kept there without much difficulty; whereas, in the latter case, they are liable to be displaced by the movements of the muscles or parts; also, in the latter case, the contiguous soft parts are much more liable to be lacerated by broken edges of the bone than in the former. In treating the oblique fracture, the limb should, if possible, be placed in such a position as will relax the principal muscles connected with the bone; in the transverse fracture, the straight position is often the best. The general symptoms of a fracture are deformity of the limb, caused either by the overlapping of the bones, or effusion of blood, lymph, or serum into the cellular tissue—the shortening of the limb; and crepitus, or a grating sound when the ends of the fractured bone are moved upon each other. Treatment.—The treatment of fractures consists in restoring the broken fragments, as nearly as possible, to their former positions, and securing them in that state. When displacement has taken place, it is first of all necessary to soothe the muscular irritation by means of gentle frictions or warm fomentations; after which, by a gentle application of force, the bone is to be restored, as nearly as possible, to its proper position. When the limb has been reduced, or set, it is to be placed in splints, which are thin pieces of wood, or other material of the requisite firmness and length, shaped and hollowed out, so as to fit evenly without making undue pressure upon any part. The skin is to be protected by folds of linen, or thin, soft pads, a little wider than the splints, which are also useful to prevent them from slipping. These are to be bound upon the limb with a moderate degree of pressure, and they ought to be removed and readjusted occasionally, in order to detect and rectify any deviation that may be observable. The mode of healing, in simple fractures, differs little from the manner in which bone is originally formed. Immediately after the fracture has taken place, a quantity of blood is poured out into the surrounding cellular tissue by the vessels of the adjoining structures; inflammation sets in, and the periosteum,

Framboesia.

becomes thickened; lymph is poured out, by which the ends of the bone are united, and in which bony matter is formed, until a complete union is effected. The period taken for the accomplishment of this varies according to the bone broken, the age, constitution, &c., of the patient. It is quicker in children than in adults, and it is slowest in old age. Taking all ages, however, the time occupied is from two to eight or ten weeks. The treatment of compound fracture consists in placing the broken bones in apposition, and healing the external wound, so as to convert the compound into a simple fracture. This is best done, when it can be effected, by bringing the edges of the wound together with adhesive plaster, or with sutures if necessary. But the modes of treatment in this, and the other complicated cases of fracture, are so varied, and depend in so great a measure upon the circumstances of each particular case, that they can only be properly treated at the hands of a skilful surgeon.

FRAMBOESIA, or **YAWS**, *frām-be'-zē-ä* [Fr. from *framboise*, a raspberry], a disease of the skin, indigenous to Africa, the West Indies, and some parts of America. It consists of imperfectly suppurating tumours, which gradually increase in size until they become as large as, and somewhat resemble, a raspberry. The period during which the disease is in progress varies from a few weeks to several months. When it has reached its height, it usually continues for some time without undergoing much change, and then passes away. It seldom proves dangerous, except from the mischievous interference of ill-directed art. The "master yaw," however, as it is called, or one of the pustules that retains a much larger size than the rest, sometimes remains large and troublesome after the others have disappeared, and requires to be treated with gentle escharotics. The *framboesa* is propagated solely by the contagion of the matter discharged from the eruption when applied to the broken skin of another person who has not previously had the disease; for it only affects the same person once.

FRAXINUS, *fräk's-e-nüs* [from Lat. *frango*, I break, in allusion to its brittleness]. The Ash, a gen. of the nat. ord. *Oleaceæ*, consisting of about fifty species, mostly natives of Europe and North America. *F. excelsior*, the common ash, a native of Britain, is a beautiful and umbraguous tree, rising to the height of 100 to 150 feet. The sweet concrete excretion known as *manna* is procured by making incisions in the stems of certain species of *Fraxinus*, chiefly *F. Ormea* and *rhombifolia*, natives of Calabria, Apulia, and Sicily. Manna is a mild, agreeable laxative, very suitable for children, to whom it may be given in doses of 6 to 10 grains. It is, however, apt to produce flatulence. It owes its properties to a peculiar resin called mannite.

Galbanum.

FRECKLES, *frēk'ls* [Lat. *lentigines*], are small yellow or brownish spots which appear on the face, and sometimes on the neck, hands, or other parts of the body, especially of fair persons, or persons much exposed to the weather. Various applications have been proposed for their removal, and perhaps the best is a liniment composed of lime-water and oil, with the addition of a little ammonia.

FRONTAL, *front'-äl* [Lat. *frontis*, the forehead], in Anat., denotes of or belonging to the forehead; as the frontal bone, arteries, nerves, &c. The frontal bone is that bone of the skull which goes to form the forehead, as well as part of the temples, the upper portion of the nose and orbits, and part of the base of the skull. It is convex anteriorly and concave posteriorly, resembling somewhat in shape the half of a cockle-shell. On the inner surface there is a ridge, hardly perceptible at the upper part, but becoming more prominent towards the bottom, to which the falc cerebri is attached. The frontal sinus is a cavity, usually occurring between the two plates of the frontal bone behind the eyebrow, and extending to the nose.

FROST-BITE. (See CHILBLAIN, GANGRENE.)

FUMIGATOR, *fu-mi-ga'-shn* [Lat. *fumigo*, I perfume], is a mode of diffusing vapours over a limited space, for the purpose of hiding or destroying offensive odours, or killing matter of an infectious or unwholesome nature. (See DISINFECTANTS.)

FUNGUS, *fung'-gus* [Lat.], is a term applied to any luxuriant formation of flesh on an ulcer, commonly known as proud flesh. It is also applied to a disease of the structure of a part which culminates, is soft and excentric. *Fungus Hamatodes*, or soft cancer, is a peculiar morbid growth, having a remarkable resemblance to the medullary substance of the brain, and hence sometimes called *medullary sarcoma*. In some instances its colour is quite white, in others light red, and occasionally it has been found of a dark red colour; it is extremely vascular in structure, and the coats of its vessels are remarkably delicate, whence result frequent hemorrhages. Extirpation is the only mode of treatment known to have any effect in this disease, and, as in ordinary cancer, this frequently affords only temporary relief. (See CANCER.)

FURUNCULUS, *fu-rün'-ku-lüs* [Lat. from *furo*, I rage], is the name given to an inflammatory tumour, commonly known as a boil. (See BOIL.)

G.

GALBANUM, *gal'-bə-nüm* [Lat.], a fetid gum-resin used in medicine, internally as an anti-spasmodic, and externally as a

Galena.

stimulant and disengaging application to indolent tumours and chronic swellings. It is imported from India and the Levant having probably been brought down the Persian Gulf, and is usually met with in irregular tears about the size of a pea, *unguiculated* into irregulars. It is of a greenish-yellow colour more or less translucent and shining, and has a strong disagreeable odour and an acid bitter taste. Its properties are similar to those of *assafetida*, but it is less powerful. Botanists have as yet been unable to determine the plant yielding this resin. The compound pill of Galbium now commonly called the compound pill of *assafetida* is made by heating together and stirring till of proper consistency 2 ounces each of *assafetida*, gall ammonia, and myrrh, with 1 ounce of triclinum. Dose 5 to 10 grains. Galbanum plaster is composed of 1 ounce each of galbanum, ammoniacum, and yellow wax, and 8 ounces of lead plaster.

GALENA *gu'le nu* [Gr. *galea* tranquillity (in account of its supposed effect in mitigating disease); an important mineral form being the principal ore of lead. It is a pyro-sulphide of the metal, and is found crystallized more or less distinctly in cubes of a deep leaden colour and strong metallic lustre. It is found in veins in crystalline rocks, and most abundantly in carbonaceous limestone.

GALIPEA *gali pe'* in lot a gen. of the nat. ord. *Burseraceae*. The species *G. officinalis* and *cupressa* yield the oil, 1.1 wu is *Angustura* or *Cusparia* bark. (See ANGUSTURA BARK.)

GALL BLADDER *gawl* [Sax. *gealla*, gall, Lat. *vescula fellea*] in Anat. is an oblong membranous receptacle, situated on the concave side of the liver, under the right lobe. It is about the size of a small hen's egg, and resembles a pear in shape. It has three coats—an external or peritoneal, a middle or fibrous and an internal or villous. The inner coat has a articulated honeycomb appearance, but does not possess any foldings for the purpose of secretion. It serves as a reservoir for the bile which when digestion is not prolonged regurgitates through the cystic duct and is retained for future use. The cystic duct connects the gall bladder with the hepatic duct which receives from the liver and the two which joined form the *ductus communis choledochus* by which the bile is conveyed to the duodenum. The cystic duct presents internally a number of folds, which are generally circular.

GALLIC ACID *g'lik' id* [from *galls*]—This important vegetable acid exists ready formed in the gall nut, in saffron, in walnuts, and in a large number of other astrigent vegetables. It is readily obtained by allowing an infusion of gall nuts, or powdered gall nuts freely moistened

Galvanism.

with water, to stand in a warm place for some weeks, a species of fermentation is set up during which the gallic acid is formed in large quantities by the decomposition of the gallo-tannic acid or tannin contained in the galls. Gallic acid is extensively used as a source of pyrogallic acid, so largely employed in photography. It is employed medicinally as an astringent, being given internally in doses of 2 to 10 grains. It is used externally, in the form of glycerine of gallic acid composed of 1 ounce of gallic acid to 4 fluid ounces of glycerine.

GALLIG GAWLZ [Sax. *gealla* a gall] excretions produced on the branches and leaves of trees by the attacks of insects. Oak trees are especially liable to be thus attacked. The galls of the British *Pharmaeopoeia* are excretions of the *Quercus infectoria* caused by the punctures and deposited ova of *Dryocosmus quercus*. They are hard, heavy, globular bodies varying in size from half an inch to three fourths of an inch in diameter; of a bluish green colour on the surface, a yellowish white within, with a small central cavity. They are odoriferous but have a bitter and very astringent taste and are easily reduced to powder, which readily yields its properties to water. The tincture, 1/2 ounce of galls in coarse powder to 1 pint of proof spirit, is given in doses of 1/2 to 2 fluid drachms. The ointment 80 grains of galls in fine powder and 1 ounce oil benzoated linseed thoroughly mixed, is a most useful application to external hemorrhoids.

GALVANISM (see CALCULUS)

GALVANISM or *VOLTAIC ELECTRICITY*, the science which relates to the phenomena connected with a peculiar form of electrical force obtained by certain arrangements of metals and liquids. Galvani a professor of anatomy at Bologna in 1789 made the discovery that the transmission of electricity through the nerves of a frog recently killed, would excite muscular contractions, and he afterwards found that similar convulsions could be produced by merely touching the nerves and muscles with two different metals and then bringing the metals into contact. Upon these and similar phenomena observed in an extended series of experiments with different animals Galvani based his theory of "animal electricity," which was received with enthusiasm by the Italian physiologists of his day. According to this theory every animal is endowed with an inherent constitutional electricity generated in the brain and distributed through the nervous system, the principal reservoirs being the muscles. Volta, a professor of natural philosophy at Pavia, repeated Galvani's experiments and proved that the contractions in the muscular fibre depended, not on any peculiar electrical condition of the animal frame, but on

Gamboge.

a feeble action derived from the metals with which the nerves and muscles were brought into contact. To determine the exact conditions under which electrical disturbance is produced, he commenced a course of experimental researches on the energies of different metals, which eventually led him to the discovery of the *pile*, an apparatus which must be regarded as the source of all the great discoveries relating to electricity made in modern times. Two theories have been offered in explanation of the action of the voltaic pile or battery. The *contact theory* of Volta assumes that different metals have different electrical capacities, and that electrical disturbance results from simple contact. This theory is embarrassed by anomalies and improbabilities, and has been rejected by most scientific men. The *chemical theory*, now generally adopted, assumes that the chemical action set up between the solids and liquids of the pile is the source of its power. The facts which support this theory are very numerous, and most of them are inexplicable when viewed by the light of the contact theory. The current force of the voltaic battery has been practically applied to many useful purposes. It is much used as a remedial agent in the treatment of many forms of disease of the human body, decided relief having been obtained in paralysis, lock-jaw, St. Vitus's dance, tic-douloureux, deafness, &c.

Gamboge. (*See Camboog, Garcinia*)

Ganglion., *gäng'-lōn* [Gr., from *grao*, I feed upon], is a small rounded or elongated nervous mass, of a reddish-grey colour, situated in the course of the nerves. They are of two kinds, one forming part of the cranial system of nerves, and situated near the origins of many of the cranial and all of the vertebral nerves, the other forming part of the sympathetic system, extending in a series along each side of the vertebral column, and occurring numerously in other parts. They differ widely from each other in figure and size, some of them being large and conspicuous, while others may be almost termed microscopic. They are composed of two substances, one white, like the medullary matter of the brain, the other reddish-grey, somewhat resembling the cerebral cortical substance. The internal medullary filaments are the continuation of the nerve upon which the ganglion is situated. They are invested externally by a thin but firm and closely adherent envelope, continuous with the sheath of the nerves, and composed of dense areolar tissue. This outward covering sends processes inwards through the interior mass, dividing it, as it were, into lobules, and supporting the numerous fine vessels which pervade it. A section through a ganglion in the direction of the nervous cords connected with it discloses to the naked eye merely a collection of reddish-

Gangrene.

grey matter, traversed by the white fibres of the nerves. (*See Nervous System*.)

Ganglion, in Surg., is a small indolent fluctuating tumour, developed in the course of the tendons, and containing a semi-fluid secretion enclosed in a cyst, generally communicating with the tenacious sheath. They sometimes form without any apparent cause, but generally they arise from some wrench or tension of the tendon. They are most frequently situated about the wrist, and the swelling is usually globular; but when much enlarged, it is rendered irregular by the pressure of the tendons. The treatment consists in rupturing the cyst, and allowing the contained fluid to be extravasated into the cellular tissue, where it is speedily absorbed, whilst the cyst inflames and becomes obliterated. A common mode of rupturing them is either by firm compression with the thumb, or by striking the swelling sharply with some oblique body, as the back of a hook, the part being subsequently bandaged, and rest enjoined for a few days.

Gangrene, *gäng'-rē-nē* [Gr., from *grao*, I feed upon], is a term applied to the first stage of mortification, so called from its eating away the flesh. It is divided into two kinds, the moist and the dry, the former, called also inflammatory or acute gangrene, is that which is preceded by inflammation, while the latter, called also chronic or idiopathic gangrene, is that which takes place without any visible inflammatory action having preceded it. The most frequent causes of gangrene are violent inflammation, or suppuration, contusions, burns, cold, deficient circulation of the blood, or impaired nervous energy.

Characteristics.—When it results from high active inflammation, there is at first severe pain in the part attacked, and generally a considerable degree of swelling. After a time, however, the part, from being cold, the redness disappearing, and being replaced by an irregular dark colour of the skin, in some parts approaching to black, while in others it is of a dark brown or greenish blue. If there is a running sore, the discharge from it will cease; the cuticle is raised by vesication, from which, on breaking, there issues a bloody serum. The constitution sympathises with these local changes, the inflammatory fever of the earlier period disappears, and is succeeded by great languor and debility, the pulse is weak, quick, irregular, and sometimes intermittent, the stomach deranged, debilition frequently occurs, and bronchitis is one of the most characteristic signs of the disease in its more advanced stage, the countenance also indicates the existence of great local and constitutional derangement, the features are collapsed and the eyes sunk. When the gangrene is not the result of high

Garcinia.

and active inflammation, the inflammatory or febrile symptoms are slight or altogether wanting; but there is the same discoloration of the skin, vesication, discharge of bloody serum, and mortific appearance. *Treatment*.—In the treatment of this disease, during the active inflammatory stage, local bleeding with leeches, and also bleeding from the arm, if the strength of the patient warrant it, but care has to be taken to reduce the general tone of the system as little as possible. Soothing fomentations and warm poultices should be applied to the part, and, as internal remedies bark, wine, and opium will be found most beneficial. When the gangrene cannot be stopped in its first stages, then the separation of the mortified parts is to be expedited, which is best done by yeast or port wine poultices, supporting the constitution at the same time. When this cannot be done, the removal of the limb, if practicable and not contra-indicated by a too weakened state of the body, is the only chance of saving the patient's life. Gangrene resulting from severe cold is remarkable for the little pain generally preceding the part having frequently perished without the patient being aware of the circumstance. A part suffering from a severe degree of cold should first be rubbed with snow or a coarse towel, in order to restore the suspended circulation, avoiding at first any artificial heat, which might be the means of inducing inflammation. Gangrene may also arise from a diseased state of the blood-vessels, attended with debility of the constitution, a form of the disease commonly known as *gangrene senilis*. It rarely occurs except in advanced life, and usually attacks the lower extremities, proceeding from the toes upwards. Its progress is sometimes slow and sometimes rapid, in some cases it is attended with little or no pain, in others it is very painful. As the parts mortify, they become dry and hard. The constitution should be strengthened by the free use of bark, opium, and port wine, and the part should be covered with hot moistened with camphorated spirits of wine, and the limb wrapped in cotton. Hospital gangrene, or *phagedænia gangrenosa*, is a form of that disease which attacks open wounds or ulcers, and is so called from its appearing most frequently in crowded hospitals, and causing a fearful mortality among the patients. Its symptoms and treatment are similar to those already mentioned.

Garcinia, *gar sin'ehi*, a gen. of the nat. ord. *Guttiferae*. The species *G. mangostana*, a native of Malacca, produces the mangosteem, which is reputed to be the most delicate of all fruits. The seeds of *G. purpurea*, upon being boiled in water yield a concrete oil called kokum butter, or oil of mangosteem. It is very useful as an application to cracked hands. *G. morella* yields our com-

Gastritis.

mercial and officinal camboge, which is brought from Siam. The pipe, or roll camboge, is the finest kind. In Medicine, camboge is used as an active hydragogue and drastic purgative. (See CAMBOGE.)

GARGLES, *gar'gl* [Lat. *gargare*, I wash the throat], is lotion or wash for the throat. It is used by taking a mouthful of the liquid, and then throwing back the head, by which it is passed into the lungs, it is agitated and made to wash all parts of the inner surface. Gargles are extremely useful in various diseases of the throat, and differ in their composition according to the purpose which they are intended to serve. In order to allay inflammation or reduce swelling, warm water with a little vinegar is the best that can be used; when a stimulating effect is required, a mixture of infusion of Peruvian bark, port wine, and tincture of capsicum, to promote suppuration, barley-water and infusion of linseed, used warm, and, as a pure astringent, a decoction of Peruvian bark, with alum or borax, will be found useful.

GÄLIC (See ARTHRITIS)

GASTRALGIA (See HARTBURN)

GASTRIC or *BILIOUS FEVER* is a fever resembling typhus, but manifesting itself more particularly in a disordered state of the alimentary canal, being generally attended by vomiting or diarrhoea. The treatment does not differ from that of typhus fever and fever generally (which see).

GASTRIC JUICE, *gas'trik* [Gr. *gaster*, the stomach] is the name given to the digestive fluid contained in the stomach, and which is secreted by the gastric glands on the introduction of food or other foreign substance. It is a clear, colourless, transparent fluid, inodorous, a little saltish, and very perceptibly acid. Its most singular component is a peculiar organic substance called pepsin, to which its special properties are chiefly owing. The use of the gastric juice is to dissolve the various kinds of food in the stomach, reducing the albuminous and gelatinous portions of it to a state fit for absorption into the system. It has also an antiseptic property, as it suspends putrefaction, and restores the freshness of tainted meat. (See DIGESTION, STOMACH, PERPSIN.)

GASTRITIS, *gas'tri'tis* [Lat.], in Surg. denotes inflammation of the stomach. It is known by pain in the epigastric region, increased when anything is taken into the stomach, together with vomiting and cough, the pulse small and hard; and general prostration of strength, attended by fever and anxiety. It is produced by poisons of various kinds taken into the stomach, as arsenic or corrosive sublimate; by food of an improper nature; by draughts of any cold liquid when the body is much heated. *Treatment*.—In the treatment of this disease bleeding is now generally disapproved of,

Gastrodynia.

Except perhaps in very extreme cases Warm fomentations to the region of the stomach, or the hot bath, should be had recourse to, and much relief will often be experienced from the sucking of ice. Mucilaginous drinks, barley-water, or gruel will be of service, particularly when occasioned by the presence of acrid substances, in aiding their evacuation and protecting the stomach. Enemas are a class of medicines that are of much use, by acting upon the system without coming in contact with the stomach. In most cases a purgative enema should first be given, and afterwards such as are nutritive.

GASTRODYNIA, or CRAMP IN THE STOMACH.
(See CRAMP.)

GELATINE, or GELATIN, *gel'-a-teen, gel'-a-tin* [Spanish *gelatina*, from the Lat. *gelo*, I freeze] an acetised principle, which has hitherto been obtained from animal tissues only. Bone, skins, flesh, and other parts of the animal yield gelatine when boiled, but it does not appear to exist in a free state in any of these substances. Gelatine softens and swells in cold water, but does not dissolve until the liquid is heated. When the solution cools, it solidifies to a firm jelly, hence its name.

GENTIANA (See PHYSIOLOGY).

GENTIANA *jen-she-a* in Bot., typical gen. of the nat. ord. Gentianaceæ. The officinal gentian, so well known for its bitter tonic properties, is the root of *G. lutea*, a native of the mountains of Central and Southern Europe. It is much used as a tonic and stomachatic. The compound infusion is made by infusing in a covered vessel for one hour, and then straining 60 grains each of gentian root sliced, and orange-peel cut small, and 1½ ounces of fresh lemon-peel cut small, in 10 fluid ounces of boiling distilled water. The mixture is made by macerating for two hours in 2 fluid ounces of proof spirit, ½ ounce of the root sliced and 30 grains each of bitter orange-peel cut small and coriander-fruit bruised; then add 8 fluid ounces of distilled water, macerate again for two hours, and strain through calico. Dose, ½ to 1 fluid ounce. The compound mixture is made by adding to 12 ounces of the compound infusion 6 ounces of the compound infusion of senna and 2 fluid ounces of the compound tincture of cardamoms. Tonic and aperient in doses of 1½ fluid ounces, two or three times a day. The compound tincture is made of 1½ ounce of gentian, cut small and bruised, ¼ ounce of bitter orange-peel cut small and bruised, ¼ ounce of cardamoms bruised, and 1 pint of proof spirit. Dose, 1 to 2 fluid drachms. The extract is prepared by macerating 1 lb of gentian sliced in a pint of boiling distilled water for two hours, then boiling for fifteen minutes, pressing and straining, then evaporating to a consistence for pills. Dose, 5 to 20 grains.

Gin.

GESTATION, *je-sta-shun* [Lat. *gestatio*, from *gero*, I carry], in Physiol., is applied to the period which intervenes between the time of conception and that of delivery. This period differs greatly in different animals. In the human species it is nine calendar months, or, more strictly, forty weeks, or 280 days; but by certain circumstances the period may be prolonged or shortened by several weeks, and sometimes the birth takes place as early as the seventh month.

GIDDINESS, or VERTIGO, *ver'-de-nis* [Sax. *giddis*, Lat. *vertigo*, from *verti*, I turn], is a dizziness or swimming of the head, with more or less of mental confusion, and a loss of power to balance the body. The objects around in many cases appear to be moving about in different directions, often conjoined with a sense of dimness or darkness, or with sounds of bells or drums in the ear. It generally comes on suddenly, and is symptomatic of various diseases, arising as it does, from some disturbance or debility of the nervous power. It generally precedes a fainting fit, or an attack of apoplexy, attacks fevers, inflammations, and many other diseases, and not unfrequently arises from some organic disease of the brain or heart. It frequently arises from indigestion, or may be caused by some poison in the blood, as alcohol or opium, or, indeed, by anything that greatly alters the circulation of the blood through the brain. Treatment.—In most cases it may be traced to weakness or nervous debility, and hence the treatment should be to strengthen the system by means of tonics, particularly iron, by nourishing diet, change of air, exercise, bathing, and the like. A fulness of the blood-vessels of the brain may frequently be owing to lack of tone in the vessels, arising from weakness, rather than from any preternatural determination of blood to the head. In persons, however, of full habit of body, whose heads are hot, and whose arteries are pulsating with undue force, a spare diet, purgatives, blisters behind the ears, or setons in the nape of the neck, will form the proper treatment. Frequently giddiness, when arising from indigestion, will be got rid of by administering a brisk purgative.

GIN, or GINSVA [from Fr. *genivier*, juniper], an ardent spirit largely manufactured in London and other places, and originally flavoured with juniper berries, from which it derived its name. Hollands gin is a variety of corn spirit, which was formerly wholly imported from Holland. The popularity of this spirit induced the English distillers to produce a similar liquid. At present, English gin consists of plain corn spirit, flavoured with oil of turpentine and a small quantity of other substances. Every gin-distiller has a receipt of his own, which is usually kept a secret, hence the variety of flavours to be found in this spirit; as, the plain gin flavour, the Hollands flavour, the

Ginger

whisky flavour the smoky flavour, &c. A large variety of substances is employed in the flavouring of gin among others may be mentioned sugar, bitter almonds, turpentine, crocus, lemon, cinnamon, caraway seeds, garlic, Canada balsam, horseradish, grains of paradise, cayenne pepper, and several other herbs, seeds, fruits, &c.

Ginger (See ZINGIBER)

GINSANG (See PAXAV)

GLAND, gland [Lat. *glans*] in Anat., is an organ of the body, composed of blood-vessels, nerves, and absorbents in which secretion is carried on, as the lacrimal, mammary and salivary glands. They are variously divided by anatomists according to their structure or their contents. In form glands are (1) Simple, consisting of small hollow follicles, covered with a peculiar membrane, and having a proper excretory duct, as the mucous glands of the nose (2) Compound, consisting of many simple glands, the secretory ducts of all of which meet in one common duct, as in the salivous glands of the face &c. (3) Conglobate or lymphatic glands, composed of a texture of lymphatic vessels, connected together by cellular membrane (4) Composite, composed of numerous simple glands with their ducts all entering into one common trunk, as the parotid and salivary glands. According to their contents they are divided into mucous, seaceous, lymphatic, sial, and lacrimal. There are also what are termed ductless glands which resemble the others in external conformation, but differ from them in the absence of any duct or opening for the removal of the secreted fluid, and, indeed, few of them contain any secreted fluid. Glandular swellings are not unfrequent, especially in weak and scrofulous persons. They occur about the neck or other parts of the body in comparatively painless, and of very slow growth, with little or no tendency to suppuration. In such cases, the system should be strengthened with tonics, as iron and quinine, nourishing diet, and pure air. Cod liver oil is also usually of great service, and, where practicable, sea-bathing should be adopted. When there is no inflammation, and the glands merely remain indurated, iodine is a very useful application in producing absorption, as by painting the part with tincture of iodine, or applying the red iodide of mercury ointment diluted with lard. Glandular swellings also occur in certain diseases, as scarlet fever, &c.

GLAUBER'S SALT *glaub'-er's* [from *gland*], is a disease communicated to man from the horse, and characterized by a copious discharge of mucus from the nose, purulent eruptions on the skin, and unhealthy abscesses in the lymphatic system. It is common to distinguish two forms of this disease—*glanders* when the nasal cavities are the parts chiefly affected, and *farcy* when

Glossa.

the lymphatic system is the seat of the disease, but the two are essentially the same, and the one passes readily into the other. In man the first symptoms of glanders are usually a general feeling of indisposition, lowness of spirit, wandering pains followed by fever, great thirst, profuse perspirations, and a copious offensive discharge from the nostrils. After a time, these symptoms increase, pustules and tumours form in different parts of the body, which have a tendency to suppurate and become gangrenous abscesses appear in the neighbourhood of the joints, the nose, eyelids and face swell and perhaps ulcerate, the nasal discharge becomes more and more profuse and offensive, and is streaked with blood, at length the patient expels usually before the twentieth day. In farcy, the patient receives the poison through a wound or abrasion which inflames violently, the lymphatic vessels and glands swell and ulcerate, abscesses form in different parts of the body and the disease passes into glanders. *Treatment* The treatment consists in supporting the strength of the patient with wine or brandy, nourishing diet and tonics, and in counteracting the effects of the poison in the system. In order to do this the ulcers should be opened, and the ulcers or nostrils frequently washed or anointed with solution of chloride of zinc, or other disinfectant application. The internal administration of crocus, the iodide of potassium or the sulphate of soda or magnesia are recommended by some, but it must be confessed that little is yet known of the best modes of treating this terrible disease.

GLAUBER'S SALT *glaub'-er's* [after Glauber], in Chem., the old name for sulphate of soda (See Soda, Sulphate of)

GLAUCOMA, OR GLAUCACT (See EYE, DISEASES OF THE)

GLOBULIN *glob'-u-lin* [Lat. *globulus*], a term applied to one of the protein bodies of albuminoids which is associated with fibrinogen. As haemoglobin it forms the principal ingredient of the blood globules; mixed with albumen, it is also found in the cells of the crystalline lens of the eye, and is thus distinguished by the name of crystallin.

GLOMUS HYSTERICUM [*Hysterical ball*] is a symptom in hysteria, marked by the feeling of a ball rising upwards to the throat, frequently attended by a feeling of suffocation. It is very common with persons of a nervous temperament and is occasioned by the air ascending in the oesophagus being prevented by spasm from reaching the mouth. (See Hysteria, Nervous Diseases.)

GLOSSA, or GLOTTA, *glos'-a, glot'-ta* [Gr. *glossa*], is a name given to the tongue, and forms part of the name of various parts connected with that organ. The glossopharyngeal nerves are the ninth pair of nerves, issuing from the processes of the cerebellum, and

Glossitis.

terminating by numerous branches in the muscles of the tongue and larynx. (See Tongue.)

Glossitis, glos'iti's [Gr.], in Surg., is inflammation of the tongue. It may result from various causes as mechanical injury, exposure to cold, the use of mercury, &c. The tongue becomes greatly swollen, and is painful to the touch; respiration and deglutition are much interfered with, and one of the chief dangers of the attack is suffocation. In mild cases, ice and the use of purgatives will afford relief, but, in the more severe forms, leeches will have to be applied to the part, or the knife may have to be used, and pretty deep incisions which will afford almost instantaneous relief.

Glossis, glo'sis [Gr.], in Anat., is the name given to the superior opening of the larynx situated immediately behind the root of the tongue and covered by the epipharynx. (See LARYNX.)

Gluten, glu'ten [Lat.], in Chem., a characteristic ingredient in cereal solids. If the flour of wheat or rice be made into a paste with water and washed in a bag of fine linen the starch is carried down by the water along with the liquid and left in the remaining grey starch and mucous mass is gluten. Gluten may be considered to be the principal flesh forming substance contained in wheat.

Glycerine, glu'cer'en [Gr. glykunē, sweet] in Chem. C₃H₈O₃, the sweet principle of oils and fats which is separated from them during the process of saponification. It is a viscous colourless liquid of a sweet taste soluble in water and alcohol in all proportions, but sparingly so in ether. In Med. it is used in preference to oil or other fatty matters to keep worms in a soft condition on account of the soap with which it may be washed off. It is a useful application to chapped hands and it is also employed as a solvent for various medicaments as starch, borax, carbolic acid, and tannic acids. Glycerine of starch is formed by rubbing together 1 ounce of starch and 8 fluid ounces of glycerine till they are intimately mixed, then transferring to a porcelain dish and applying a heat gradually raised to 24° stirring constantly till a translucent jelly is formed. In the other cases the proportion is 4 fluid ounces of glycerine to 1 ounce of borax, &c.

Glycyrrhiza, glyc'er'rhiza [Gr. glykūs, sweet, riza, root]. Liquorice, a genus of Leguminosae, sub class Papilionaceæ. The root, the underground stems of *G. glabra*, the common or smooth liquorice, *G. echinata*, the alatum podded liquorice, and other species, possess a remarkably sweet taste, which is due to the presence of an uncrystallizable sugar, to which the names of Glycyrrhizose, Glycon, and Liquorice sugar have been given. The dark-coloured ex-

Goitre.

trusive matter which the rhizomes furnish on decoction contains a large proportion of this peculiar substance. The extract impregnated is largely imported into this country, under the names of *Liquorice juice*, *Spanish juice*, and *Italian juice*. It is extensively cultivated at Mitcham, and also at Pontefract. It is used for confectionery purposes, and in medicine for flavouring, and as a demulcent pectoral medicine; it is also used by the brewers for colouring porter. The extract is formed by macerating 1 pound of the root coarsely powdered in two pints of distilled water for 12 hours, then straining and pressing. Again macerate the pressed mass for 6 hours, strain and press. Mix the two liquids heat them to 21°, strain through flannel, and then evaporate by water bath to suitable consistency for pills. The extract forms an ingredient in confection of senna compound decoction of aloë compound senna mixture, tincture of aloë, and opium lozenges. The root is an ingredient in the confection of turpentine compound and decoction of sarsaparilla in the form of linseed, mercurial pill, and 10 hole iron pills.

Goopax (Coronil) is a well known quack medicine, frequently given to children in order to soothe them and keep them quiet. When used in surgery, it is commonly 15, it often causes much mischief and even sometimes occasions death. This is owing to opium which it contains. It is prepared in various ways but the following is one of the most common — Infuse 9 ounces of saffron and one ounce each of the seeds of caraway, coriander, and anise in 6 pints of water, simmer the mixture until it is reduced to four pints then add 6 pounds of treacle, and boil the whole for a few minutes. When cold add 3 fluid ounces of opium.

Goitre, goy'atr [Fr. goître, probably a corruption of Lat. guttus, the throat], is a preternatural enlargement of the thyroid gland, occasioning a swelling of the throat, which frequently attains a very large size. It is also termed *Bronchocœs* (Gr. bronchos, the throat, and kœs, a swelling) and *Derbyshire neck*, on account of its prevalence in the hilly parts of Derbyshire. It is, however, in the Alpine districts of Europe, especially Switzerland, Savoy, and Tyrol, that it is chiefly to be met with. It is also common in certain regions of the Andes and Himalayas. It is frequently associated withcretinism (which see). It is endemic, or common to certain regions, and has been attributed to various causes, but is now generally believed to arise from the use of drinking water strongly impregnated with lime. It also occurs hereditarily, independent of endemic influence. It is much more common among males than females, and usually occurs about the age of puberty. It is not of an inflammatory or malignant

Gold.

character, is free from pain, and generally of the natural colour of the skin. At first the tumour is soft and elastic, but as it increases in size, it becomes hard and firm. Its size often becomes so great as not only to be a serious inconvenience, but even to impede respiration and obstruct the voice. Treatment.—The treatment consists in first of all removing the patient from the district where the disease has originated. Iodine is found to be most useful in the removal of the swelling and the restoration of the system to its natural state. It may either be given internally, or applied externally in the form of ointment, or of the tincture painted over the part. The iodide of ammonium and the iodide of potassium are perhaps the best forms of it for internal use. Cod liver oil and the iodide of iron are also very valuable medicines in this disease. Means should also be taken to strengthen the system, as tonics, nourishing diet &c. Generally, if not of long standing, the swelling yields to these means. Another form of goitre is termed *ophthalmic*, on account of the great protusion of the eye balls which attends the glandular swelling. In this case the patient generally suffers from palpitation of the heart, inuria and general derangement of the health. In this form of the disease special attention requires to be directed to the general health. Iron should be administered to improve the condition of the blood; the diet should be light, nourishing and unstimulating. Digitalis should be administered to control the action of the heart, and some recommend also belladonna.

Gold, gold [Stx gold], symbol Au [see sum], equiv 197, spec grav 19.3 Pure gold for chemical purposes may be obtained by dissolving standard gold in one part of nitric and four parts of hydrochloric acid. The solution is diluted and filtered, and evaporated almost to dryness, to expel the excess of acid. The remaining salt is then boiled with a solution of sulphate of iron, which precipitates the gold as a dark bluish purple powder, which is subsequently washed with water and hydrochloric acid. Gold, in its ordinary metallic form, has a reddish-yellow colour, but when very much extended it transmutes a green light, being purple by reflected light. When pure it is nearly as soft as lead, and is the most malleable and ductile of all metals, but is inferior to many in its tenacity. It does not combine directly with any of the non-metallie elements except chlorine, bromine, fluorine, and phosphorus. The oxygen acids do not combine with either of its oxides, and the only way in which the chloride can be formed is by dissolving it in hydrochloric acid, to which some oxidizing substance has been added such as nitric acid, chromic acid, or binoxide of manganese. Selenic acid acts upon it by oxidation, its

Gout.

acid being converted into selenious. The hydrated alkalies do not act upon gold, except in a strong current of air, when auric acid is formed, which combines with the alkali. The higher alkaline sulphides dissolve it in the form of tarsulphide. The terchloride of gold, $AuCl_3$, is made by dissolving metallic gold in aqua regia. It is very soluble in water and alcohol, and still more so in ether. The ethereal solution is the *aurum potabile* of the ancients. Terchloride of gold has occasionally been used as medicine in syphilis, scrofula, and rheumatic affections, but it is mainly employed as a test for atropia and other alkaloids.

Gold-leaf Ornament is a compound of sulphuret of arsenic and spermaceti ointment, and is a good application for the lids of inflamed and sore eyes.

Gossypium *gos ip e um* [Lat. *gossypium*, the cotton plant] the cotton plant, a gen. of the nat. ord. Malvaceæ, or Mallow fam. Several species furnish cotton, which consists of hairs covering the seed.

GOUARD'S WATER (See LILAC, Acute of)

GOUT *gout* [Fr. *goutte* Lat. *qua* a drop], is a painful disease of the joints generally of the feet or hands and more particularly of the great toe. It occurs mostly in persons indolent in life and who indulge freely in the luxuries of the table and is hereditary. The attack is usually preceded by a disorderly state of the digestive system, and commonly begins by a painful swelling of the first joint of the great toe. It returns at longer or shorter intervals, when it may attack various other parts, but generally the great toe is the chief seat of the disease. Sometimes the attack comes on without any previous warning, but usually, for some days or weeks before the patient has been suffering from indolence, with diminished appetite, flatulence, costiveness, and a general feeling of lassitude and depression of spirits. He goes to bed perhaps in tolerable health, and after a few hours is awaked by the severity of the pain in the great toe, or sometimes the ankle heel, or calf of the leg. The pain resembles that of a dislocated bone, and is attended with the sensation as if cold water was poured over the part, and this is succeeded by chilliness, shivering, and other febrile symptoms. These gradually abate as the pain increases which at length becomes excruciating, and it continues usually to the following night, with sometimes, however, a period of intermission during the day. The pain is of a burning or gnawing character. The next night, after some time of tossing and restlessness, the patient succeeds in falling asleep, a gentle perspiration breaks out, and he awakes to find himself stretched and the part comparatively free from pain. On examining the limb next morning, it is found to be considerably swollen, the toe

Gout.

red and shining, and the veins of the foot much distended. There are usually a number of subsequent attacks, becoming less and less severe, before what is known as "a fit of the gout" is over, so that it commonly extends over a period of several weeks, or even months. When the fit is over, the system is relieved, and the person feels, both in mind and body, much better than before the attack. At first a fit of gout occurs only once, perhaps in two or three years, but it becomes by degrees more and more frequent, more violent and of longer duration every succeeding fit. In its progress various parts of the body become affected and translations take place from one joint or limb to another. After frequent attacks the joints lose their strength and flexibility, and become so stiff as to be deprived of all motion. Concretions of a chalybeate appearance are likewise formed about the joints, and in the case of the kidney there is from a deposit of the same kind of a compound of uric acid and lime. This is a most painful occurrence, and it is in autumn that it often occurs, probably from the increased coldness of the weather at those times. Such is the general course of the disease, but it is not the regular course, but like it certain other kinds which differ widely in their general character. In the first instance the disease instead of attacking the joints attacks the internal organs, such as the stomach when the patient suffers from indigestion, diarrhoea, vomiting, and severe pains in the rectum, &c., when it is called gouty colic, and either acute or chronic gout (Lat. *gelatio et nuda*) is when after the inflammation has occupied a joint it suddenly disappears and is transferred somewhat rapidly to the stomach, lungs, or brain when it may give rise to various fatal disorders. Misplaced gout is when instead of attacking the joints, the disease proceeds inward and causes an inflammatory affection of some of the internal parts, with the same symptoms that attend inflammation of these parts from other causes. Cause.—The cause of gout has been shown by Dr Garrod to be the excess of uric acid in the blood resulting either from excessive formation or a checked excretion, for there is reason to believe that this substance exists in very minute quantities in the blood even in perfect health. Treatment.—Topical remedies are of little use in gout. Bleeding is not now generally approved of, although, if the patient is plethoric and the attack severe, great relief is sometimes experienced by the abstraction of a little blood. Purgatives and sudorifics, however, should be had recourse to, and the patient kept on low diet. Colchicum is the medicine which has been found to have most effect in this disease, serving to ward off, mitigate, or shorten an

Gryphosis.

attack. "You may give," says Sir T. Watson, "40 or 60 minims of the extract in a saline draught at bed-time, and half a drachm more in a warm black dose the next morning, and you may repeat this sequence if the gout continue. In this way the pain is usually calmed and the swelling reduced in a few hours." The colchicum should be continued for some time after the attack in small doses of say 5 minims of the wine two or three times a day, using also mild purgatives if the remedy is not appropriate. Strict moderation in diet must also be observed, particularly in regard to meat and wine. The great cure of this disease is strict attention to diet, and plenty of active exercise. The Scotch cure of "living on sixpence a day and working for it" is based upon the true nature of the disease. (See Dr Garrod "On the Nature and Treatment of Gout".)

GRACILARIA, OR PLOCARIA, *grä-sil'la-ri-ä* *res-*, in Bot., a species of plants belonging to the order *Alga*, or Sea weeds. The *Gracilaria lichenoides*, *Plocaria cendula*, or *Gigartina lichenoides*, is our Ceylon moss. It is nutritious, emollient, and demulcent, and may be employed in the form of a decoction or jelly as a food for children and invalids, and medicinally in pulmonary complaints, diarrhoea &c. *Gracilaria plocaria*, or *Gigartina helminthosporia*, is a Cerealian moss. It has been used principally as a vermifuge, but its properties have been much overrated. (*Loek's Hand Book of Ceylon*)

GRAIN (See ALLOTHYCARUS' WEIGHT)

GRAINS OF PARADISE (See AMOMUM)

GRANATUM (See PUNICA)

GRANULATION, *gran-u-las-hun* [Lat. *granulatio* from *granum*, a grain], is the name given to that process by which small grain-like fleshy bodies form upon the surface of ulcers and suppurating wounds, and serve for filling up their cavities and bringing nearer together and uniting their sides. Sometimes, in weak or unhealthy constitutions granulation proceeds very slowly; at other times it is excessive, rising above the level of the surrounding skin, without showing any disposition to heal, but forming what is popularly termed proud flesh. (See WOUNDS, ULCERS.)

GRAPESE (See VITIS)

GRAVEL (See CALCULUS)

GREEN HELLBONE (See VARATRUM)

GREEN SICANES (See CHIOSIS)

GREEN VITRIOL (See IRON, AND PARTS OF)

GREGORY'S POWDER, OR PULVIS RHEUM COMPOSITUS (See RHUM.)

Get it prepared by boiling one ounce of groats or oatmeal in a pint of water till it is reduced to half a pint. This forms a very useful article of diet for invalids.

GRIFFROSIS, *grif-ro'-sis* [Gr. from *griffos*, to incurvate], in Surg., is a disease of the nails, which turn inwards, and irritate the

Guaiacum.

soft parts below (See NAILS, INGBROWING OF THE)

GUAIACUM, *guas' yd kum* [from *guayar* its native name], a gum of the nat. ord. *Zygophyllaceæ*. The species *G. fuscata* is a fine evergreen tree, from forty to sixty feet in height, and of a dark gloomy aspect. It is a native of the West India Islands, particularly Cuba, St Domingo, and Jamaica. The wood is remarkable for its hardness, toughness, and durability, qualities which render it particularly valuable for many purposes. It is known in commerce as *lignum iugum*. This wood, and a resin obtained from it are offici*al*, and are known respectively as guaiacum wood and guaiacum resin. The latter is generally procured by heating the wood, either by boiling the chips in salt water, or more commonly by burning hollow bulletts and catching the resin as it flows out from them. It also exudes to some extent spontaneously, and especially so when the tree is cut or wounded in any way. Both the wood and resin are used as stimulants, diaphoretics, and alteratives, chiefly in scurvy and rheumatism and also in syphilis and various cutaneous affections. The dose of the resin is from 10 to 30 grains. The mixture is formed by triturating $\frac{1}{2}$ ounce of the resin in powder with $\frac{1}{2}$ ounce of refined sugar and $\frac{1}{4}$ ounce of gum arabic powdered and adding gradually 1 pint of distilled water. Dose 1*oz* to 2 fl. drachm. The resin is also an ingredient in the compound pill of subchloride of mercury, to the extent of 1 part in 2*'s*, and the wool in the compound decoction of sarsaparilla, $\frac{1}{4}$ ounce to 1 pint.

GUINEA WORM (See MYIASIS)

GULET (See ABSCESSUS)

GUM *gum* [*gum* *gomme*] is that cellular and elastic fleshy substance which covers the alveolar portions of the upper and lower jaw and envelopes the neck of the teeth.

GUM, gum [*fr. gomme*] a vegetable product, which forms a slimy solution with water, but is insoluble in alcohol ether, and oils. There are six varieties of gum—gum arabic, gum Senegal, gum of the cherry, and other stone-fruit trees, gum tragacanth, gum of Bassora, and the gum of seeds and roots. All these gums, except the last flow spontaneously from the branches and trunks of their trees, and sometimes from the fruits in the form of a mucilage which dries and hangs in the air the gum of seeds and roots however, requires to be extracted by hot strong water. A number of very different substances are confounded in commerce under the name of gum. Thus, gum elemi and gum copal, which are true resins, gum

Gunshot Wounds.

GUINNAMICUM, which is a gum-resin, and **gum elastic** (osmotic bone), which differs from both, are all called gums. Gum arabic is obtained from the *Acacia arabica* or *A. senegal* tree which grows upon the banks of the Nile and in Arabia. It is used in medicine as an ingredient in lozenges, in chalk and guaiacum mixtures, in compound powder of almonds and tragacanth and in mucilage of sausages. This last is formed by dissolving 4 ounces of the gum in 6 fluid ounces of distilled water. Gum Senegal is collected from the *Acacia Senegal* by the negroes during the month of November. Its chemical properties and uses are similar to those of gum arabic. Gum tragacanth is gathered in Asia Minor from the *Artelia gummifera*. It is white or reddish in colour, almost opaque and has the appearance of broad thin flakes or twisted ribands. It is difficult to pulverize it without heating the mortar to 120° . Gum tragacanth is used in medicine as a demulcent and for holding inelastic matters in solution. The mucilage is formed by adding 20 grains of the gum in powder to 10 fluid ounces of distilled water in a pint bottle and stirring briskly for a few minutes at intervals till the mucilage is formed. The *cup and spoon* is made by rolling well together 1 ounce each of tragacanth, gum acacia, and each in powder with 3 ounces of refined sugar. Dose 20 to 60 grains. It is also used in the compound pill of opium in the composition of opium.

GUNSHOT is a small abscess which forms in the cellular substance of the gum. At first it is sufficient simply to protect it a unit cold, but if it continues to advance, the process of ripening may be hastened by hot applications to the cheek next to the swelling. If the pain be excessive, a leech applied to the part will usually afford relief. As soon as the presence of matter can be ascertained, it should be let out by a free incision.

GUNSHOT WOUNDS, *gun shot wounds*, is a term employed to denote wounds produced by cannon balls, bullets, fragments of shell, &c striking against the body. They differ in many respects from ordinary wounds, and constitute of themselves a distinct branch of science. Frequently on a person being struck, he is not conscious of any pain, and is first made aware of his wound by inability to use the part, or by feeling the blood trickling down. Generally, if the wound be at all severe, the patient becomes deadly pale, trembles, and seems about to die, but usually, with the aid of stimulants, these appearances pass off in a few hours. If they continue unabated they give reason to fear the worst. It was long a generally received opinion that a person might be injured by the "wind of the shot," without being struck by it at all, but this idea is now exploded, for persons have had portions of their clothes carried off by large

Gunshot Wounds.

shot and even their ears and noses shot off, without at all suffering from the wind of the shot. The real cause of such injuries is a ball whose force has perhaps been somewhat spent by previous obstacles, striking the part obliquely and then glancing off, not breaking the elastic skin, but breaking or bruising the parts underneath. When a ball enters the body the wound appears somewhat smaller than the ball itself, its edges are ragged and inverted and the part around has a bluish or black colour from the bruise. When it passes through the part, the aperture by which it makes its exit presents quite a different appearance. It seems somehow larger than the ball the edges are evanescent and there is little discolouration about the wound. Frequently a ball, if it enter obliquely, or be nearly spent instead of pursuing a straight course, becomes deflected and may be found lodged in or may pass out at a part at a considerable distance from that at which it entered. One is said to have completely round the neck and to have been allowed to the aperture by which it had entered (see section cutting) is common after gunshot wounds a hole that knows but it sometimes occur and may be fatal if not attended to. When it can be done the finger should be inserted into the wound, and pressed upon the vessel otherwise a handkerchief should be tied very tightly round the limb above the wound. It is well to examine the wound as early as possible in order to ascertain the amount of injury, at least, so far as this can be done without aggravating the case. The ball or other foreign substance ought to be removed if this can be easily effected, but otherwise it ought in the meantime to be left alone. As the walls of the wound sough and suppurate the opening will become larger, and it may then fall out or become soft, if moved. Sometimes it may remain embedded in the tissue without doing much or any inconvenience. If after a thorough and suppuration, the ball remains fixed, and if much irritation continues to be excited and abscesses form at its touch, then it may be necessary to find out its seat and use every means to remove it. The simplest dressings should only at first be applied to the wound by a piece of linen spread with some mild ointment fixed on lightly by strips of adhesive plaster, and covered with a rag kept constantly moist with cold water. Aperient medicine should also be given and sometimes it is advisable to bleed the patient. After a few days, when suppuration has set in the treatment should be changed and in place of the cold application some warm emollient poultice, but dipped in warm water should be adopted, and the system strengthened by mild tonics and a nutritious diet. The inflammation which precedes suppuration

Gutta Percha

is usually very intense, accompanied with great swelling, heat and pain of the surrounding parts, and severe constitutional disturbance fever sleeplessness &c. These symptoms change when suppuration is fully established the swelling and inflammation is lessened the fever subsides, and in slight cases the health may seem but little affected. In severe cases, however, hectic fever supervenes, with debility, copious night sweats, and diarrhea. Secondary hemorrhage not unfrequently occurs during the separation of the slough in consequence of the ulceration of some of the larger blood-vessels, which may have been injured by the ball. In such a case the vessels require to be cut down upon, and tied both above and below the opening. In cases where the parts beneath are greatly buried, but the skin itself is not broken, it is recommended to make one or two incisions in order to clear out some of the congealed blood and to permit the discharge of the slough. Where the injury is very considerable it is sometimes necessary to have recourse to amputation. When it may be necessary to do this, it will depend upon the circumstances of each particular case, no general rule can be laid down regarding it. In military practice however it is not necessary to amputate in cases where in civil practice, it would be entirely justifiable, from the danger in leaving being less, not requiring so much attention, &c. The best time for amputating is immediately after the patient has recovered from the depressing effects which usually follow the reception of the wound. (See Hunter "On Gun-shot Wounds," Guthrie "On Gunshot Wounds in the Extremities," Larrey's "Mémoires de chirurgie Militaire")

Gutta Percha *gutta percha* the concreto juice of the *Isonandra Gutta*, a tree belonging to the family of the *Sapotaceæ*. It grows abundantly in Singapore, Borneo and other islands of the Eastern Archipelago. The tree, which is called *percha*, grows to the diameter of five or six feet and on being distilled yields a milky juice, which solidifies after exposure to the air forming the gutta percha of commerce. It is a tough inelastic substance becoming stiff and plastic at 21° at which temperature it may be moulded into shape, which it retains without change until it is cool. It also possesses the valuable property of welding together at the temperature of boiling water. Its plastic properties render it extremely useful. Being impervious to moisture and resisting the actions of acids and alkalies to a great extent it is of much use to the chemist as a material for making bottles, carbons, baths, &c. It may be rolled into thin transparent sheets, which are much used for surgical purposes, being perfectly impervious to moisture.

Gutta Serena.

GUTTA SERENA. (See ANAUBOSIS.)

GYMNASIUMS, *jim'-na-si'-ums* [Gr. *gymnastike*, from *gymnos*, naked], a term applied to those exercises of the body and limbs which tend to invigorate and develop their powers. These exercise a very important influence upon health, strengthening the system and warding off or curing many forms of disease. Indeed, there is probably no more likely way of inducing disease than by giving oneself up to indolence and inactivity. Gymnastics occupied a very important place among the ancient classical nations from the earliest time. Even before the time of Hippocrates, they were made a part of medicine, and gradually were reduced into a complete system. Public buildings, called gymnasiums, were erected for the purpose; and officers for their superintendence were appointed by the state. The Romans erected gymnasiums on a magnificent scale; and on account of the extensive baths which were attached to them, they were latterly called *thermae*. Among the exercises practised in these gymnasiums, were dancing, wrestling, boxing, running, leaping, quoit-throwing, and hurling. Besides these, which formed the regular business of the gymnasium, were riding, driving, swimming, rowing, climbing ropes, swinging, mock fights of various kinds, &c. Various things in latter times have combined to cause gymnastics to go out of use as a part of education, and a method of maintaining health. It is only since the commencement of the present century that gymnastic exercises have been revived as a science. In 1806, the revival began in Prussia, when gymnasiums were opened, and the science became so popular that it rapidly attracted attention. Sweden imitated Prussia; and from that time the practice of gymnastics has formed a leading feature in the course of education in both countries; and has extended to many others. In England, the importance of gymnastic exercises to health and as a branch of education, is beginning to be recognised. Gymnastic exercises, practised under proper control, must act beneficially, both mentally and physically. They strengthen the various organs of the body, and render them more able and efficient servants of the mind; they accelerate the circulation of the blood, increase the action of the various secretive organs, promote the carrying off of effete materials, render the body less susceptible to the influence of heat or cold, and enable it to ward off many forms of disease. They also strengthen the will by giving it increased power over the bodily organs, restrain the imagination and fancy within proper limits, and in a remarkable degree abate the desire for sensual pleasures. Indeed the mental benefits which they confer are probably equally great with the physical, for they give clearness and precision to

Gymnosperms.

thought, cheerfulness, courage, presence of mind, and independence of spirit. "If you wish to develop the mind of a pupil," says Delessed, "develop the power which that mind has to govern; exercise his body; make him healthy and strong, that you may make him prudent and reasonable." The gymnastic system of Ling is one of the best methods of training now in use. Under the name of free exercises, in Ling's system are included such exercises as are performed without the help of technical apparatus, such as repos, ladders, dumb-bells, &c. The different species of free exercises consist—first, in movements of the limbs on the spot, and without reciprocal support; secondly, in movements from the spot, and without support; thirdly, in movements with support; fourthly, in wrestling exercises; and fifthly, in the exercises belonging to aesthetic gymnastics. The freedom of Ling's method from violent exertion, and the physiological principles on which it is founded, render it superior to those systems in which these are not observed. "To raise the arms from a hanging position in a loose random way, without thinking, and to stretch them in the air, can have little corporal effect, and certainly no mental one; but to stretch the arms in a manner and direction, and with a velocity all previously determined and exactly prescribed, and then to move their different parts (upper and fore arm, hand and fingers) precisely as determined and commanded, this is an exercise which, independent of their physiological effect on these limbs, tends to awaken and sharpen the sense of space and time. To learn to leap very far or very high, it is not necessary to have special gymnastic instruction; but to be enabled to leap in a certain way, with the least possible expenditure of power, with great certainty and precision, with graceful ease, with nice regard to distance, &c., this is a master calling for skilful and systematic instruction; and such a system constitutes gymnastic." (Dr. Roth.) As to the value of gymnastics as a means of curing deformities and various kinds of disease, we can only refer to Dr. Roth's "Handbook of the Movement Cure."

GYMNOSPERMS, *jim'-nos-perms* [Gr. *gymnos*, naked; *sperma*, seed], in Bot., flowering plants with naked seeds—that is, with ovules not enclosed in an ovary. They are so called in contradistinction to the *Angiosperms*, which have their seeds enclosed. The gymnosperms are made into a distinct class (*Gymnosperges*) in Lindley's arrangement. Otherwise they constitute a division of the class *Dicotyledones*.

Hematemesis.

H.

HEMATEMESIS, *hé-má-té'mé-sis* [Gr. *haima*, blood, and *emesis*, a vomiting], is the vomiting of blood from the stomach. *Characteristics*—An individual, previously perhaps, in appearance, in robust health, after some strong mental emotion or physical exertion, is suddenly seized with a sense of fulness of the stomach and sickness, when he speedily vomits, by vomiting, a quantity of blood. The attack is usually preceded by various premonitory symptoms, as loss of appetite, indigestion, nausea, uneasiness or pain in the epigastric region, &c. The blood proceeding from the stomach is to be distinguished from that coming from the lungs, and will be known by its being almost always of a dark colour, and not frothy while that proceeding from the lungs is generally bright red, and frothy. Hematemesis may exist and yet no blood be ejected, for it may go in small quantities and pass through the alimentary canal, it may also proceed from the fine mouth or nostrils. It may result from various causes, as (1) it may be idiopathic or a disease of the liver and its appendages or consequence of any other disease; (2) it may be in the place of some other habitual hemorrhage; (3), it may depend upon disease or injury of the stomach itself; (4) it may be a consequence of disease situated elsewhere, and producing mechanically a plethora of the veins of the stomach; (5), it may result from a morbid condition of the blood, and form one symptom of a more general disease. Most commonly however, it is owing to passive congestion of the walls of the stomach, or to ulceration. *Treatment*—The mode of treatment will necessarily vary, in particular cases, in general every effort is to be made to invigorate the circulation and to arrest the hemorrhage, for which purpose peristalsis in the horizontal position should be enjoined, the food should be of the lightest description, and taken sparingly in the form of cold liquids. If the patient be very much prostrated, enemas of beet root, with port wine or brandy, and a little opium, should be given, ice, and cold acidulous drinks, with a few grains of gallic acid should also be given. Some place great faith in oil of turpentine, given in small doses of from 20 minims to half a drachm every four or six hours, others recommend the acetate of lead, in combination with opium. Much benefit will often be derived from quinine and iron. This is a disease which is often feigned by impudent swallowing blood and afterwards vomiting it.

HEMATIN, *hé-má-tin* [from Gr. *haima*, blood], the true colouring principle of the blood, from which it is obtained by a very difficult process. (See Blood.)

Haemoptysis.

HEMATOXYLON, *hé-má-tok-sí-lón* [Gr. *haima*, blood, *áxylon*, wood], a gen. of the nat. ord. *Lignumosae*, sub-ord. *Cesalpinae*. The species *H. campechianum* is a tree of sub-tropical America, yielding the wood commonly known us *logwood*. The shed heartwood of this tree is officinal, being used in Medicine as an astringent and tonic. The chips of a reddish colour have a feeble, agreeable odour, and a sweetish taste, a small portion chewing imparting to the saliva a dark pink colour. The *direction* is formed by boiling 1 ounce of the chips in 1 pint of distilled water for ten minutes, adding 60 grains of powdered cinnamon bark, straining, and adding distilled water to make up 1 pint. Dose, 1 to 2 fluid ounces. Of the extract, the dose is from 10 to 30 grains.

HEMATURIA, *hé-má-tú're-ía* [Gr. *haima*, blood, and *úrion*, urine], is bloody urine, a discharge of blood with the urine, owing usually to a diseased state of the kidneys or bladder. It is a symptom of a diseased state of one or other of the organs, to which the treatment is to be directed.

HEMOPTYSIS, *hé-móp'thé-sis* [Gr. *haima*, blood, and *póthys*, spitting], denotes in medical practice the spitting of blood and is generally used by pathologists to signify the expectoration of blood from the lungs and air-passages. *Character*:—It is important to ascertain the source of the blood which escapes from the mouth, and, if determined to be from the lungs, to ascertain whether it is symptomatic of disease of these organs, or merely vicious in its character. It is not much dangerous in itself as an indication of some other dangerous disease, being most frequently connected with tubercular consumption. Bleeding from the lungs may occur without organic disease in plethoric and robust individuals living a life of excitement and excess, and in nervous, irritable individuals weakened by mental or bodily fatigue, and leading sedentary lives. It is often hereditary, and may be brought on by violent muscular effort, paroxysms of cough, blows or pressure on the chest, inspiration of irritating vapours, or of rarefied air on high mountains. The blood may be added from the tracheal or bronchial membranes, or it may proceed from capillaries communicating with the air-passages in any part of their extent. The amount varies from a drachm or two to as many pints at a time, and is generally florid, and more or less mixed with air, differing from the dark, coagulated blood which comes from the stomach. An attack is frequently announced by a feeling of heat and oppression in the chest behind the sternum, followed by a cough, which brings up the blood. When the quantity is very great, it pours forth without a cough, and almost by an act of vomiting, with considerable spasmodic effort. Among the agents that are useful in arresting haemoptysis may be noticed the

Hæmorrhage

oil of turpentine, 10 to 30 drops in a glass of water; or gallir acid, in doses of 10 to 15 grains, every three or four hours. Cold liquids, and the sucking of pieces of ice, will be of service. Nauseating medicines, tincture emetic and ipecacuanha, are also frequently employed. Common salt in a dose of from 60 to 100 grains is an excellent popular remedy. In all cases a calmness of mind, rest, either erect position or air, and firmness of the bowels, should be enjoined. When the attack prevails, from an exten^{sion} bloodletting is recommended in certain cases. If rough bo present it should be relieved by narcotics. After the attack, astringent tonics as iron and quinina may be given; and the return of the bleeding is to be guarded against by avoiding the exciting causes, and attending to the general health.

Hæmorrhage, *hæ mor'aj*, [Gr. *hauma*, blood and *regnum* I break or burst] is an escape of blood from some of the vessels of the body. The most common cause of hæmorrhage is external violence by which the blood vessels of a part are divided. **Characteristics**—When an artery of some size is thus injured a continuous stream of bright red blood is projected with a force proportioned to the size of the vessel and with a motion corresponding with the pulsations of the heart. If a vein on the other hand be injured the blood is of a dark crimson colour and the flow is continuous and feeble, with much less force than from an artery. While merely a number of capillaries are injured the blood flows in a more or less rapid stream from the wound but without being projected to any distance from the body. When a large artery is cut the bleeding is so excessive as to cause almost instant death. If a small artery fainting is usually, after a time produced by loss of blood and, the heart ceasing its action, the blood coagulates about the wound, and the stream stops up. Frequently the returning action of the heart forces away the obstruction, and the blood is fresh, and in this way, if not attended to the patient may perish from exhaustion. With arteries of smaller size, the flow of blood is at first rapid, but after a few minutes, with exposure to the air the surface contracts, the blood coagulates and the bleeding ceases, without much danger of returning. Hæmorrhage from wounded veins is much less dangerous as the blood flows with much less violence, and the edges of the vessels tend more to come together. Hence bleeding from a vein is seldom immediately fatal. When blood gushes out from internal parts, through any of the natural apertures of the body the person is commonly said to have burst a blood vessel. This however is very rarely the case. If there be any rupture, it is usually only of the minute capillaries; but even of

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this there is often no palpable evidence. Blood may gush abundantly from a surface which presents to the naked eye at least, no appreciable injury or change. There are even well-authenticated instances on record of cutaneous hæmorrhago, where a drop of blood has appeared upon some portion of the skin and soon wiped away and reappeared again, and again without any discernible change of the affected surface beyond some occasional variation of its colour. There are also what are termed habitual hæmorrhages, as from the nostrils &c which take place periodically with certain individuals and belong to the original constitution of the body. They can scarcely be regarded as disease. Again there are certain forms of hæmorrhage in the habitual which may be denominated pathological, inasmuch as they are apt to arise without any perceptible connection with antecedent local disease. Hæmorrhages are also distinguished as active and passive. The former being preceded by intense congestion in the part, due to inflammation, the latter often occurring without any apparent previous congestion of any kind. Passive hæmorrhage derives its name from being caused by some change in the condition of the blood vessels themselves by which it becomes become relaxed and dilated but more probably it arises from some alteration in the condition and consistence of the blood itself which becomes attenuated. Active hæmorrhage occurs principally in persons who are young, robust, who live well and lead indolent lives, and is for the most part to be regarded as an effort of nature to cure itself. It is followed by marked debility, only when the quantity has been excessive or when it occasions much mischief in any upon the part along which the blood passes. Hence it is frequently imprudent to employ any direct means of stopping the flow of blood, but much will depend upon the circumstances of each particular case. **Treatment**—An hæmorrhage is liable to inflammation the treatment of inflammation may often be required. In all severe cases the anti-histastic regimen should be strictly enforced. The patient must be kept in a state of absolute quiet, all motion of the body in contact with the part and all kinds of stimulating food and drink should be carefully avoided, and the patient fumigated, as much as possible by cool fresh air. Sometimes, in inflammation, it is necessary to have recourse to venesection in order to divert the current of blood from the suffering organ. Mercury is an important remedy for inward bleedings. Cold is also a valuable remedial agent placed either in direct contact with the bleeding surface, or as near as possible to it. Hence ice is very useful as a local application, and should also be sucked. Acetate of lead, and the various vegetable

Haemorrhoids.

compounds of gallic acid, are important astringent remedies in such cases. When a large artery is wounded it is generally necessary to pass a ligature round it above and below the wound, and in every case where it can be done, when the bleeding is considerable, pressure should be applied to the part.

Hemorrhoids, or *Piles* [Gr. *hamo*, and *rhis*, I flow] is a disease of the rectum and anus, accompanied by a flow of blood from those parts when the patient is stool, occurring after intervals and sometimes periodically. It is usual to apply the name either to a simple bleeding from the veins of the lower part of the rectum recurring more or less frequently, yet not accompanied with any distinguishable tumours, either within or on the outside of the anus, or else swellings formed by a viscous secretion and morbid thickening of those vessels either with or without occasional tumours or lumps, produced gradually converted into a solid substance. They are distinguishable into external and internal piles according as they are situated outside of or within the anus. A *lump* is such as does not extend anal, or such as are not often occasioned by mere chance. The tumours vary greatly in size and form some of them being hardly as large as a pea, others as large as a walnut or apple. They are sometimes attended with great pain so that the patient cannot sit nor walk with generality more or less fever and rheumatism. Sometimes the patient's stool is greatly reduced by discharges of blood, especially in violent inflammation of the rectum, which may be induced by constipation, fistula &c. Generally however the disease is of a less severe nature. — They may be caused by anything which is capable of retarding the return of blood through the lymphoidal vessels. The pressure of the gravitational arteries, constipation and the frequent retention of hardened faeces in the rectum are frequent causes. Persons of sedentary habits are often troubled with this disease. *Treatment*—In its treatment it is important that the bowels be kept open by gentle laxatives such as castor oil and castor seed will often be derived from the application of warm water to the part, or from sitting over a steam of warm water when at stool. An ointment composed of equal parts of the powder of oak galls and hog's lard, and applied to the part is usually of great service. The application of leeches to the part is also recommended if the disease be in a state of inflammation. Where all other remedies fail, it is often necessary to have recourse to an operation but this should only be in very severe cases as it is not unattended with danger. This is done either by cutting off the tumours with a

Hallucination.

pair of scissars or knife, or by applying a tight ligature round their base, so as to cause them to slough away.

Hair [hair, her (Ger. *haar*), is the small cylindrical transparent insensible, and elastic filaments which arise from the skin and are attached to it by means of small roots. Hair is found to grow on all parts of the surface of the human body except the palms of the hands and the soles of the feet. Being a bad conductor of heat, it serves to keep the surface of the body warm as well as to protect it from the influence of external heat moisture, and electricity. It thus performs an important part in the animal economy. A hair is composed of two parts—a shaft and a bulb, the former being that part which rises above the surface of the skin the latter that which is imbedded in the skin. Hair is composed of an outer cortical fibrous or horny substance which invests it and an inner medullary or pitiable substance within. The cortex or bark of the hair is composed of a single layer of cells which overlap each other and give a serrated appearance to the hair when seen under the microscope. The central portion is made up of a series of cells filled with pigment.

Hallucination [Lat. *hallucinatio* from *hallucinari*] denotes a sort of mistake in the sense. It was a favorite maxim of Kant's "that the sense do not lead us at all—it is only the mind until it leaves us." This is indeed the truth; where what is represented does not in reality exist, but difficult from what they really are, but it is not true as regards Hallucinations which are called, where the senses convey to the mind what do not really exist. Hallucinations do not depend upon the intellect but are sometimes physical abnormities. In illusions we have chiefly to consider the external occasion and the moral condition of the individual in influencing to some degree his organic and physical condition. They sometimes affect only one, sometimes several and even all the senses. Illusions of the sight are perhaps the most frequent and we commonly witness of snakes, flames, luminous spots, terrific phantoms &c. Hallucinations of hearing are also very common—humming or ringing in the ear, the sound of voices &c. Hallucinations of smell are much more rare, but hysterical persons often smell odors which are not present; such as sulphur, must, violet &c. Hallucinations of taste resemble those of smell, and hallucinations of touch are also rare. The hallucination has always a subjective ground, either the rectivo or van nerves, or the leading nerve or the reacting cerebral commissure from pressure of blood, cramp, &c. The course and termination of these states of mind, which are only symptomatic, issue,

Hand.

after longer or shorter duration, either in health, from undecoying the patient, or, if this does not happen, in a fixed idea,—in insanity. The hallucinations of sight and hearing, on account of the psychical dignity of their organs, are especially of a vital import (See Feuchtersleben's "Medical Psychology".)

Hand, Hand [Ger. *Hand*, Lat. *murus*], is the lower portion of the superior extremity, the great organ of touch and prehension. The hand is that which distinguishes man in the class of mammals, he being the only animal possessed of two hands (*binomo*). That which constitutes the hand, properly so called, is the power of opposing the thumb to the other fingers, so as to seize upon the most minute objects. The hand is composed of a number of small bones, twenty seven in all, so arranged as to combine the greatest possible degree both of strength and flexibility. These are arranged in three divisions,—those of the carpus, metacarpus, and phalanges. The carpus or wrist, comprises eight bones, arranged in two rows, four in each, and are the scaphoid, navicular or boat shaped bone, the semi-lunar, or half moon the cuneiform, or wedge shaped, the trapezoid, os magnum or great bone, and the unciform, or hook shaped. The metacarpal bones are five in number, and constitute the bones of the palm and back of the hand. The phalangeal bones are fourteen in number, three for each of the four fingers and two for the thumb. They are named in their numerical order from above downwards, &c from the palm of the hand. The inferior extremitis of the radius and ulna articulate with the scaphoid, semi-lunar and cuneiform bones of the first row of the carpus. The articulations between the first and second rows of the carpal bones are very remarkable. They are connected together by numerous ligaments running in various directions, by means of which the bones are kept in their proper positions. The second row of carpal bones articulate with the metacarpal, and form the carpo-metacarpal articulations. They are connected by dorsal and palmar ligaments, stretching from the carpal to the metacarpal bones. The metacarpo-phalangial and inter phalangeal articulations are similarly formed and are connected by lateral ligaments on each side, and a strong ligament in front. Besides these there are the various muscles of the hand, which give to it its several motions of flexion, extension, abduction, adduction, and circumduction. The hand is also richly supplied with blood vessels and nerves. To such as desire a particular account of the wonderful structure of this portion of the human frame we would recommend Bell's excellent treatise "On the Hand".

Hanging, hang-ing [Sax. *hengian*, to hang].

Hanging.

is applied to that kind of death which is brought about by the body being wholly or partially suspended by the neck, the constraining force being the weight of the body itself, while in strangulation it is due to some other cause. In both cases death commonly results from asphyxia. If however, the cord be loose, or applied to the upper part of the neck, a small quantity of air may still reach the lungs, and in such cases death will arise from apoplexy, the cerebral circulation being interrupted by the pressure. In many cases death is produced by a mixed condition of asphyxia and apoplexy. In the execution of criminals, it has often been observed that death does not always ensue within the same period of time, which is to be accounted for from the greater or less degree of constriction produced by the ligature. In some rare cases, death has taken place with great rapidity, owing to a displace-ment of the dentiform process of the second cervical vertebra, in which the spinal marrow became suddenly impressed. This cause of death, however, is extremely rare and is only likely to occur in very corpulent subjects, when a long fall is given to the rope, and when much violence is at the same time employed by the executioner. Sometimes here is in drowning, a person may in the first instance recover and subsequently die in spite of the best medical treatment from the depressing effects produced on the muscular and nervous systems. In attempting to restore animation in such cases, artificial respiration, cold affusion when the skin is warm with the vapour of ammonia, and other stimuli, are recommended to be employed. The application of electricity, or electro-magnetism in the course of the spine is also sometimes attended with benefit. If there should be much cerebral congestion on recovery, venesection may be cautiously resorted to. From experiments, as well as from the evidence of persons who have been resuscitated, we learn that asphyxia comes on in the most insidious manner in death from hanging; and that the slightest constriction of the trachea will speedily produce unconsciousness. Such persons have been conscious of a ringing in the ears, a flash of light before the eyes, then darkness and stupor. In medical jurisprudence it often becomes an important question to determine whether the individual was suspended before or after death, which must often be determined by the circumstances of each case, as there is no distinctive

Hare-lip

sign by which the hanging of a living body can be determined, or which may not be simulated in the dead subject. It is also often very important to determine whether the individual hanged himself or was hanged by others, and here, too, an opinion can only be arrived at from a consideration of the circumstances. In such cases, however, the presumption is in favour of suicide, as hanging is a difficult mode of perpetrating murder unless the strength of the parties be greatly disproportionate or the assailants numerous. Hanging is also sometimes the result of accident (See Tay lor's "Medical Jurisprudence")

HARE-LIP [Lat. *labium leporinum*], in Surg., is applied to a congenital malformation of the lip, from its fancied resemblance to the lip of a hare. It is a cleft or division of one or both lips, but usually the upper. Sometimes there is a considerable space between the parts, and occasionally the cleft is double, there being a little lobe or small portion of the lip, between the two fissures. Sometimes also the fissure extends through the bones of the mouth. The operation for hare-lip consists in pinning off the edge of the separated parts on each side, and bringing the two now surfaces together, so as to close up the fissure, retaining them in their places by means of what is known as the twisted suture. This operation should be performed as soon as possible after birth.

HARRISON, SPLEEN OF. (See AMMOMIA.)

HAY A THIA or **HAY-FEVER** is a peculiar disease, having the symptoms of a severe cold and those of asthma superadded. There is headache, suffusion of the eyes, irritation of the nasal, faecal, and bronchial mucous membranes, with sneezing and a dry, harsh cough. At intervals there may be severe attacks of asthma. This disease is believed to arise from the inhalation of the aroma of mown grass and hay. It is not a common disease, and few persons are liable to it. In order to cure, the patient should be removed from the locality, if possible to the sea-side. Tonics and antispasmodics should also be given, as quinine and iron tincture of lobelia, ammonia, assafetida, &c.

HEAD (See BRAIN, ANATOMY.)

HEADACHE, *Head-ach* [Sax. *head*, head, *ace*, ache], or pain in the head, is a complaint of very common occurrence, and may result from so many different causes that it is impossible to lay down any special directions regarding it. **Characteristics**—There are few diseases with which it does not occur symptomatically; and it is a prominent symptom in all fevers and inflammations, and in many nervous complaints. It occurs idiopathically, either from weakness or exhaustion of the nerve-power of the brain, or from a disordered state of the digestive apparatus. Sometimes it is an obtuse pain extending over the whole head, with a sense

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of heaviness and a general torpidity of the sensorial power, disqualifying the person for continued mental effort. The sight is often dim, the hearing dull, and the memory defective. This arises from some weakness or exhaustion of the brain, and is produced by irregular circulation of blood in the head, by great mental exertion, or by violent mental passions. **Treatment**—When it arises from an overloaded condition of the blood-vessels of the brain there is usually a bloated countenance, full red eye, and a dull inanimate expression. Cold applications to the head, leeches to the temples, or cupping on the back of the neck, with sparo diet and active aperients are the proper means to be adopted in this case (See BLACK, DISSEASING OF THE). Where it proceeds from nervous exhaustion or nervous irritability, soothing and strengthening measures are to be adopted and stimulants to be as much as possible avoided. Tonics ought to be employed, and such other means, as outdoor exercise, sea bathing &c., as tend to strengthen and invigorate the system. Hilarious headache, or such as arises from a disordered state of the digestive organs, usually affects one side of the head only or but a portion of it most commonly over one eye, and increases in an acute and often throbbing pain. It is commonly accompanied with a feeling of sickness, often leading to vomiting, and producing extreme languor and depression of spirits. This kind of headache seldom lasts more than a few hours at a time, and may generally be removed by taking a blue pill at bed time, with a colocynth pill or other aperient, in the morning. In rheumatic headache, which is commonly caused by exposure to cold, the pain is of a remittent, shifting nature, shooting from point to point, and is felt most at night, when the patient is warm in bed. (See RHEUMATISM.)

HEALTH, *Healt* [Ang. *heal*], is that condition of the living body in which all the vital, natural, and animal functions are performed easily and perfectly, and unattended with pain. It consists in a natural and proper condition and proportion in the functions and structures of the several parts of which the body is composed. From physiology we learn that there are certain relations of these functions and structures to each other, and to external agents, which are most conducive to their well-being and permanency, which constitute the condition of health. States which are deviations from the due balance between the several properties or parts of the animal frame constitute disease. The most perfect state of health is generally connected with a certain conformation and structure of the bodily organs, and well marked by certain external signs and figures, a well proportioned body, calm and regular circulation of the blood, free and full respiration, easy digestion, &c. There are,

Health, Public.

however, few persons who can be said to enjoy perfect health, and hence, in ordinary language, when we speak of health we imply merely a freedom from actual disease. In this sense the standard of health is not the same in every individual; that being health in some which would be disease in others. The healthy pulse in adults over ages from 70 to 80 per minute, yet there are some in whom 90 or 100 is a heat by pulse. Muscular strength and activity, nervous sensibility, and the sensorial powers vary exceedingly in different individuals, yet all within the limits of health. There is scarcely any earthly blessing men hold so highly as health, and yet there is none they so despise; for deplore the loss of when deprived of it. In order to preserve health it is necessary to be temperate in food, exercise, and sleep, and to pay strict attention to bodily ailments, abstaining from spirituous liquors, and the over indulgence of sensual gratifications.

HEALTH PUBLIC (See SANITATION SCIENCE)
HEARING (See IN DRAINED)

HEART, *hart* [L. *cordis*; Lat. *cor*] the great central organ of the circulation of the blood is a hollow muscular organ in the form of an irregular cone, placed obliquely in the lower or front part of the thorax and inclining a little to the left side. The base is directed towards the spine and corresponds with the fourth and fifth dorsal vertebrae while the apex points between the cartilages of the fifth and sixth rib on the left side. It rests upon the diaphragm, having the lower surface somewhat flattened. It is enclosed in a membranous bag called the pericardium, but only so as to allow free motion. The heart may be considered as double the right side being pulmonary, and serving to transmit blood only to the lungs, the other system forcing the blood into all parts of the system. It contains four cavities—two at the base termed auricles and two at the apex named ventricles. The right auricle has four apertures—one from the superior vena cava, by which the blood is returned from the upper portion of the system, one from the inferior vena cava returning the blood from the lower parts of the system, one from the coronary vein by which the blood is returned from the heart itself, and one into the right ventricle. The blood passes from the right auricle into the right ventricle the entrance to which is guarded by a fold of the lining membrane forming a valve called the tricuspid, from its presenting three points. The blood is sent from the right ventricle into the pulmonary artery, by means of which it is conveyed to the lungs. The entrance to the pulmonary artery is guarded by three semilunar valves, which prevent the blood from again flowing back into the ventricle. The blood is returned from the lungs to the heart by the pulmonary veins

Heart, Diseases of the.

which convey it into the left auricle. From thence it is sent into the left ventricle, the entrance into which is guarded by the mitral, or bicuspid valve, consisting of two pieces, of which the right one is much larger than the other. The left ventricle has its walls much thicker than the right, and forces the blood into the aorta, for distributing over the entire system. At the commencement of the aorta, there are three sigmoid or semilunar valves as in the pulmonary artery for preventing the blood from returning. The heart of a foetus differs from that of an adult in having a foramen ovale, through which the blood passes from the right auricle to the left. The exterior fibres of the heart are longitudinal, the middle are transverse, and the interior oblique. The contraction of the heart is termed systole, its dilatation diastole.

HEART DISEASES OF EYES—The heart from the important part which it plays in the animal economy, is subject to various, serious, and often fatal diseases. Little or nothing can be learned of its condition except by inspection, and hence it must have recourse to other means. The ear is the principal means of obtaining a knowledge of the state of the heart and it is used for this purpose (which see) we are enabled to detect the existence of various diseases. The heart gives out two sounds, known as the first and second, which are distinguished from each other. The first sound is longer than the second, and the interval between the first and second sounds is shorter than that between the second and first. They have been compared to the two syllables *tap tap d d*. An instant alteration in these sounds is indicative of the existence of disease. They may be high or low, clear or dull, muffled, rough, intermitting &c. Muffling or muffle sounds may arise from disease of the valves. The power of distinguishing between the normal and abnormal sounds of the heart and the causes producing the latter can only be obtained by lengthened experience. Diseases of the heart are usually divided into two classes:—(1) Functional or nervous, and (2) structural or organic. Among the former are palpitation, syncope or fainting, and angina pectoris (which see). They are chiefly to be met with in persons of a naturally nervous temperament more especially women suffering from hysteria or other like complaints and may be induced by mental excitement. In such cases, no attention should be paid to the general health and by means of tonics, sea bathing, and gentle outdoor exercise, the system is to be strengthened. Violent exertion in violent mental excitement, are particularly to be avoided. Among the principal organic diseases to which the heart is subject are pericarditis, carditis, endocarditis, atrophy,

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hypertrophy, dilatation, and valvular disease. *Percarditis*, or inflammation of the pericardium, may be induced by exposure to damp or cold or by other causes which give rise to inflammation in other parts. It frequently arises from acute rheumatism or from Bright's disease. It is characterized by great tenderness over the region of the heart, amounting when pressed, to sharp cutting pains which prevent the patient from lying upon the left side. In us usually the case the pleura is involved, there will be acute pain on coughing or drawing a deep breath. Sometimes the attack is not so severe, and only a slight pain is felt, or only a sense of heaviness and oppression. Generally the action of the heart is increased, sometimes so much as to constitute palpitation. Frequently there is a considerable quantity of fluid effused into the cavity of the pericardium which is sometimes externally visible by the bulging out over that part. Its treatment depends very much upon the particular circumstances of each case. Where the disease is rapid and violent bleeding may be of great service, but this course is not so much relied on as practice now is familiar. The inhalation of poppy in full strength doses twice or three hours, is recommended to give her with opium to relieve the pain and restlessness. Poppy somniferous, or laudanum poultices, applied to the part seem to relieve the pain and the vapour bath will usually be found beneficial. The diet should at first be light and nourishing, but if the patient is very weak stimulants will be necessary, and afterwards the system should be strengthened by truffles. *Carditis* is inflammation of the heart itself sometimes occurs, but it is usually accompanied with inflammation of the pericardium, the symptoms in both cases are the same and the treatment will consequently be similar in both. The late remarks also apply in great measure to *enfermitude* or inflammation of the investing membrane of the heart, which is usually accompanied by one or both of the above. In this case there is more or less of fear and anxiety and a peculiar sound of the heart is heard upon auscultation. *Atrophy*, or a wasting of the heart's substance, arises from a deficiency in the supply of nutritive matter. It is usually accompanied by general emaciation and will be pretty sure to terminate in death. When the heart is examined after death, its tissues are found to have undergone a change, and, instead of a striped, to present a homogeneous appearance. This is called "fatty degeneration." The treatment is to strengthen the system by tonics, wholesome and nutritious diet, open air exercise, sea bathing, and the like. *Hypertrophy*, on the other hand, is the result of an excess of nutrition, the nutritive process appearing to go on

Heart, Diseases of the.

more rapidly than the absorbtion. In this way the heart is often greatly enlarged in bulk, and its operations seriously interfered with. It is usually distinguished into three kinds—(1) simple, when the walls of the heart or its divisions, are thickened, without any diminution in the capacity of the cavities, (2) concentric or aneurismal when the walls are thickened, and the cavities likewise enlarged, and (3) concentric when the cavities are diminished in proportion to the thickening of the walls. The first of the three is the least common, and the second the most frequent, and any of them may affect a single cavity or the whole heart. In the force with which the blood is propelled in such cases being greatly increased, the tendency is to produce haemorrhage, accumulation of the ascitic serosity, &c. The pulsations are frequently regular but strong, and in a even visibly raising the bed clothes and the chest is bulged out over the part. Now at times, and more or less deputation, according to circumstances, are to be seen to be employed in such cases and usually with care and perseverance, the symptoms will be much alleviated. Dilatation of the heart is where one or more of the cavities are enlarged in size without the substance of the heart itself being increased. It is sometimes caused by increased size of the heart and may be produced by excessive exertion or strong exertion of any kind. It frequently also arises from want of sufficient muscular strength in the heart itself or from some obstruction to the free passage of the blood. It is characterized by want of vigour in the circulation and by feebleness and debility. In exertion in the patient he will often be exhausted by the loss of even a small quantity of blood and may even be carried off during a trifling haemorrhage. Attention to the general health so as to strengthen the patient and restore the circulation to its normal state while all extrinsic causes are to be avoided are the means to employ in such circumstances. The valves of the heart are subject to a variety of diseases which interfere with their proper action. These are among the most easily detected of the organic diseases, on account of the sounds produced by them. The valves frequently become thickened, or even cartilaginous or ossaceous, so that they do not act freely, or close imperfectly, leading to obstruction or regurgitation of blood. Being connected with the endocardium of internal lining membranes, disease of the valves often result from repeated attacks of endocarditis. These obstructions tend to produce oppositions of the birth apoplectic fits, syncope, and various congestions—as haemoptysis, albuminous dropsy, &c. The mode of treatment in such cases will depend upon the particular symptoms present; otherwise the general mode of treatment

Heartburn.

indicated above, of strengthening the tone of the system, and equalizing the action of the heart, is to be followed. (See Watson's "Lectures on the Practice of Physic," Copland's "Dictionary of Medicine," Dr. Walsh's "Diseases of the Heart and Great Vessels.")

HEARTBURN., *hart-burn* [Lat. *cardia*, the heart, and *algor*, pain, or *caustica*, from *gaster*, the stomach, and *algor*] is an uneasy sensation in the stomach, ascending with acid excretions and a burning heat into the throat. Sometimes it is attended with oppression, faintness, nausea, and an inclination to vomit, or a plentiful discharge of a clear, limpid, fluid-like saliva, commonly termed water-brush (*pyrosis*). In some cases a gnawing or burning pain is felt, chiefly at the cardiac, or upper orifice of the stomach, whence the name is derived. It is usually a symptom of dyspepsia, but it may also be occasioned by other coni plants, as worms, inflammation of the stomach or intestines, various diseases of the heart &c. It may also be occasioned by violent emotions of the mind. Indigestible foods, as animal fat, oil, butter, cheese, &c., are very apt to occasion it. The best remedies are alkalis combined with mild aperients, such as magnesia or tartarate of soda and rhubarb. The great thing, however, is to restore the healthy action of the stomach, and to avoid such substances as tend to produce it. (See DYSPÉPSIA.)

ELECTRIC FEVER., *heli' til* [Gr. *heilīs*, a habitual] is employed to denote a protracted or habitual fever, and is generally applied to that intermittent fever which usually occurs in the latter stages of consumption. It is usually a symptom of the affection arising from some incurable disease of a vital part, or of a common part where of some magnitude. It is not always as was once believed owing to the continued formation of pus, but it is always associated with some analogous bodily wasting. In all cases there is a drain upon the system beyond its powers of supply. It is commonly characterized by morning and evening paroxysms, with intermediate remissions; and while the evening paroxysm is usually the most marked. Towards evening, as the paroxysm comes on, the listless, languid manner which prevailed during the day becomes changed, the eyes brighten, the conversation becomes animated, and the cheeks assume a beautiful flush. This may continue for five or six hours, when the manner and appearance of the patient become entirely changed, the hectic flush passes away, and a chill spreads over the entire frame, followed by a profuse perspiration, which leaves the patient utterly prostrate. Day after day the sad story is repeated, the patient is gradually reduced in body and strength, diarrhoea usually comes on, and the sufferer at length sinks

Hepatitis.

exhausted. The treatment consists in seeking to counteract the symptoms of the disease by means of tonics and sedatives, and in striving to overcome the disease of which it is a symptom. Stimulants are in general to be avoided. Sarsaparilla is said to have proved highly serviceable in many cases (See EXTRASIS).

HELMINTH., *hel'mint* [Lat. *ivis*, a gen. of the nat. ord. *Araucariae*. *H. helix* is the well-known climbing evergreen which grows over old trees and walls. Medicinally, the ivy is reputed to be diaphoretic, and its berries are emetic and purgative.

HELEX (See LAR.)

HELLBORINE (See HELLBORUS.)

HELLBORUS., *hel'bo-rus* [*ir.*], a gen. of the nat. ord. *Ranunculaceæ*. The most important species is *H. nigr.* the black hellebore, so called from the colour of its roots. It is a native of the shady woods of the low mountains in many parts of Europe. It flowers in winter, and on this account is sometimes called the white hellebore. Hellebore root is imported in large and barrels from Hamburg and is used medicinally as a drastic purgative. (See VIBRARIUM.)

HELMINTHIC., *hel'min' thic* [Gr. *hel'minthos*, a worm] denotes belonging to or connected with worm. (See WORMS.)

HEMIDESMEUS., *hem' i des' meus* [Gr. *hem*, half, *desmos*, a bond] a gen. of the nat. ord. *Asclepiadaceæ*. The root of *H. indicus*, or Indian sarpaparilla, has been for some time in use in India under the name of country sarpaparilla, and was declared by the medical officers of the Madras establishment to be an efficient substitute for true sarpaparilla in the treatment of scrofulous, syphilitic and cutaneous affections. It has obtained a place in the new British Pharmacopœia. The syrup is prepared by infusing 4 ounces of the root in a pint of boiled distilled water in a covered vessel for four hours straining, and decanting, then add 5 ounces of refined sugar and dissolve by means of a gentle heat. Dose, 1 fluid drachm.

HEMLOCK (See COVÍUM.)

HEMORRHAGE (See HAEMORRHAGE.)

HEMP (See CANNABIS.)

HEPATI (See HYDROCEPHALUS.)

HEPAR the liver. (See LIVER.)

HEPATIC, belonging to or connected with the liver. (See LIVER.)

HEPATITIS., *hep' a ti'tis* [Gr. *hepar*, liver] a term applied to inflammation of the liver. In temperate latitudes hepatitis is a rare disease but in tropical climates it is often so acute, sudden, and fatal, as to defy medical treatment. The principal indications of the disease are, pain in the right side and shoulder, inability to lie on the left side, tenderness in the right hypochondrium when pressed, together with enlargement of the liver, difficulty of breathing

Hepatization.

a dry cough, hiccup, often vomiting, always fever, with loss of appetite and a foul tongue. It is frequently accompanied by jaundice. Hepatitis may terminate in resolution, in diffused suppuration, or more frequently in the formation of a circumcribed abscess or abscesses in the liver. These frequently lead to adhesions of this organ to neighbouring parts, as the stomach, or intestines, and the matter may be discharged by vomiting or by stool. When adhesion takes place to the walls of the abdomen, the tumour may be punctured. Though an abscess in the liver is never without danger, yet many recover from them. Much depends upon the direction in which the pus finds vent. Hepatic suppuration and dysentery are frequently found together, particularly in hot climates. In the early stages of this disease, when not attended by dysentery, purgatives should be given to diminish the congestion of the organ. Blood-letting, which used to be generally resorted to, is not now usually recommended unless perhaps in very severe cases, and when the system will bear it. The more common practice now is rather to endeavour to support the strength of the system during the course of this disease. Mercury, however, may with advantage be given to excite the action of the liver, but not to the extent of producing salivation. Opium will frequently be of service as a sedative. Where dysentery is present recourse must be had to astringents and the usual remedies adopted for that disease. (See DYSENTERY.) After the disease has been subduced, vegetable tonics are useful in restoring the digestive powers. When the disease has supervened in a warm climate, a removal to a more temperate region is always advisable.

Hepatization, *he-pat-i-za'-shn*, a term applied to a diseased state of a lung in which the spongy character of its texture is lost, becoming hard and solid, and of the nature of liver, whence the name. (See PNEUMONIA.)

Herbs, *herbe* [Lat. *herba*], plants which have stems that die down annually to the surface of the ground. The term *raulis* is used to distinguish an herbaceous stem. As a general rule herbs used in pharmacy should be collected when they are beginning to flower in a dry day about midday, when they contain least moisture; they should then be subjected to a gentle heat, and afterwards spread out and frequently turned so as to dry quickly.

Hereditary Diseases are such diseases as are transmitted from parents to their children, as gout, scrofula, miasis, &c. This may be more or less marked in some children than in others; and it may even fail to appear in the immediate children and manifest itself in the grandchildren. This is known as *atavism*. "A person therefore cannot be considered free from the inheri-

Hernia.

tance of constitutional maladies simply because his parents may not have suffered from any of them: and now it is admitted, that under at least three generations the investigation of hereditary tendency is uncertain." — (Aitken, "Practices of Medi-

cine.") **Hernia** or **Rupture**, *her'-nē* [Gr. *hernes*, a branch, from its protruding forwards], a general term applied to the protrusion of any viscera from its natural cavity. In a more restricted sense, however, the word usually signifies a protrusion of the abdominal viscera. Hernia, in the latter form, is unfortunately very frequent. Many causes contribute to this frequency. The nature of the walls of the abdomen, which are principally composed of muscle, and the condition of the viscera within—loose, liable to change of size and situation, and subject to irregular pressure by the contractions of these muscular walls—more particularly tend to the production of this disease. Hernia may occur at any point of the anterior part of the abdomen, but it most frequently makes its appearance at the groin, the navel, the labia pudendi, or the upper and fore part of the thigh. The parts which are most frequently protruded are either a portion of the omentum, or a part of the intestinal canal, or both together; but the stomach, liver, spleen, bladder, &c., have been known to be thrust forth. From these two circumstances various names are employed to denote the position or the contents of the hernia, as *inguinal*, *umbilical*, *crural* or *formal*, *epiploic*, *enterocele*, *entero-epiplocele*, &c. Men are much more liable to hernia than women, the proportion being about four to one; and the liability to the disease increases with years. A hernia is always composed of a "sac" and its contents. The former is a portion of the peritoneum pushed forward by the protruding viscera, and forming a pouch. A certain quantity of fluid is always found secreted in the sac together with the viscera. The principal divisions of the ordinary disease are—reducible (when it is returnable into the abdomen), irreducible, and strangulated hernia. Reducible hernia is treated by placing the patient on his back, relaxing the muscles by bending the thigh upon the abdomen, and pressing the tumour back in the proper direction; a truss then requires to be worn so as to retain the protrusion within the abdomen. Each particular kind of hernia requires its special form of truss. If the hernia be recent, and occur before the age of puberty, a radical cure may sometimes be effected in two or three years. When the protruded viscera cannot be returned into the abdomen, the hernia is termed irreducible. Cases of this kind are treated either by means of a truss having a hollow pad, so as to embrace the tumor; or radically, in some cases, by keeping the

Herpes

patient recumbent on low diet for two or three months during which time the bowels are kept open by laxatives and injections, the tumour being equally pressed during the time. When a portion of the intestines protruded is so tightly constricted that it not only cannot be returned into the abdomen but has its circulation arrested also the disease is called "strangulated hernia." If relief is not speedily obtained when the disease occurs in this form, it is highly dangerous for the strangulated part becomes gangrenous. If the intestines cannot be returned by pressure chliriform is all ministered internally, so as to relax the muscle or a hot bath, or bleeding to the excess of faintness. If none of these methods are of any avail, the operator is obliged to divide the constriction by means of the knife.

Herpes, or TETTER *her'pez* [Gr *herpo* I creep] is a disease characterised by inflamed patches of irregular form and size comprising clusters of vesicles of various size—these yield fluid which dries up then increasing that drops off seldom leaving any perceptible scab. It is not contagious and usually runs its course in two or three weeks, requiring no further treatment than perhaps an acetate of lead lotion to allay the smarting and an aperient to move the bowels if necessary. One form of this disease *herpes zoster* *sor'zis* or shingles makes its appearance in the form of blisters encircling half the circumference of the body. This is popularly regarded with great fear and country people believe that death will ensue if the band completely encircles the body. This however is not the case unless the patient be very old and feeble. It is usually preceded or attended by feverish symptoms languor loss of appetite head ache sickness chills with frequently severe pains of a neuralgic nature. The fever and symptoms usually subside when the eruption is completed. Very little is necessary in the way of treatment beyond attention to the bowels and regulation of the diet. The local irritation may be relieved by an acetate of lead lotion and if the pain be severe opiate fomentations may be applied.

Hiccup or Hiccough *hi'cup* [Lat *angulare*] is a convulsive motion of the diaphragm and parts adjacent. It is most commonly caused by some accidental irritation of the stomach from food or wind, but it may also be caused by worms and it frequently arises from diseases of the liver ulceration of the nose, &c. It is usually removed by warm fomentations, by a little cold water volatile oil or a sudden fright. Sometimes yet, it will remain obstinate, and not be any remedies.

Jerks, Disease of the is a disease which manifests itself in children usually between the ages of seven and fourteen, and more particularly in cold, moist

Homœopathy

climates. It usually begins with a slight pain in the limb which is frequently referred to the knee and after a time the patient begins to walk awkwardly or limp, with it. On examination the affected limb is observed to be elongated and emaciated and the power of the hip flattened. After a time the mobility of the joint is much impaired or lost, other destroyed and the limb becomes considerably shorter than the other. Collections of matter now form and are discharged and the disease if not arrested either terminates in death or the patient recovers with a stiff joint and a wasted useless limb. **Cause**—It may be occasioned by external violence, as a blow, or a fall by exposure to cold or damp or lying on the damp ground and most frequently occurs in sciatica and in scrofula. **Treatment**—The treatment consists in soaking on it first applying a poultice to allay the inflammation by means of cold plasters rest & montations and a nasal bleeding by leeches or cupping and afterwards, if necessary, in having recourse to setons or incisions. Attention must also be paid to the general health and nourishment diet bark, and wine should be given if the strength requires it.

HIPURIC ACID *hi'pu'retik' asid* [Gr *hippos* horse *urine* *urinæ*] an acid contained in the urine of the horse's tail. It is most easily obtained from the tail of the cow which according to Poussin's art, contains 13 per cent. It has a bitter taste, and reddens litmus paper powerfully.

Hippophae *hi'po'fæ* the Mare's tail, a genus of the net cord *Ulmaceæ*. *H. salicaria* is common in stagnant water and slow streams. It possesses astringent properties and is sometimes used by the common people as tea in diarrhoeas and hemorrhages.

Hinterland or LYRECH

HOG'S LARD (*See LARD*)

HOTTY (*See LILY*)

HOOLYNOCK (*See ATHENA*)

HOME SKINNESS (*See NOVATGIA*)

HOMOEOPATHY *hom'ēōpathi* [*Gr homos*, like, and *pathos* state or feeling] is the name given to a system of medical treatment introduced by Samuel Hahnemann, a German physician in 1796 and now extensively practised and having many adherents. Hahnemann had observed that Peruvian bark which acts as a specific in the production upon the healthy subject exactly the same symptoms as those of the disease which it served to cure. Contrasting his observations in the same direction, he concluded that he had obtained a number of other instances to the same effect; and at length he came to the conclusion that diseases are cured by such substances as produce symptoms similar to them on the healthy body hence the great doctrine of this sect is, "Similia similibus curantur" (like are cured by like). Their opponents

Honey.

they term allopathists [Gr *allo*, other and *pathos*, state], and assert their doctrine to be, "Contra *contra* contraria curantur" (contraries are cured by contraries). The general law, that like is cured by like, ¹ y no means originated with Hahnemann, but is as old as the time of Hippocrates, by whom it was first propounded. No one, however, previous to Hahnemann, had ever attempted it to be of universal application. Nothing is better suited for restoring circulation to a frozen limb than to rub it with snow, and the best mode of treating a burn is to take out the heat by holding it to the fire. The horrors that arise from vaccination are also owing to the same principle. Hahneman could not, ² by experiments upon himself and others, with a view of ascertaining the effects produced by different drugs upon healthy subjects. These "provers" constituted the basis of his system, and he laid it down as a fundamental principle that no medicine should be given to the sick that had not been first proved upon those in health. That they produced in the healthy subjects symptoms exactly resembling a particular disease was regarded as a proof that it was calculated to cure that disease. All diseases they regard as an effort of nature to get rid of sonic impunity, and that the object of medical treatment should be to assist nature in this. It is said that the countervailing of the disease that ³ is at first brought about by this mode of treatment led Hahnemann to discover that his medicine could only be given with safety in infinitesimally small doses. This then, is another great principle of the system. In the case of a medicine where an ordinary medical man would prescribe perhaps a grain, the homopathist would administer only the minutest part of a grain or even less. They assert that only very minute doses are fitted to act upon a system already prepared to their influence by the existence of the disease, and hence the amount of the medicine must be diminished so as to exert its curative power upon the system without aggravating the symptoms of the disorder. This system has been adopted by not a few medical men of distinction, and its adherents are to be found in most parts of the civilized world. There is reason to believe that the system is now on the decline, owing probably to the introduction of more liberal views among medical men generally. It is worthy of remark that not a few homoeopathists practise both systems; and their patients may be treated homoeopathically or allopathically, as they prefer.

HONEY., *hēn'ē* [Sax *hūnig*, Lat *mēdīa*] a fluid, or semi-fluid substance, very similar in its properties to sugar. It is collected by different kinds of bees from the nectiferous glands in the cup or chalice of flowers. It partakes of the qualities of the plant from

Hooping Cough.

which it has been derived, and hence some varieties of honey, obtained from the acacia, rhododendron, &c., are poisonous. The most wholesome kinds are derived from the genus *Erica*, called heather honey, and from most labiate plants. Honey differs much in colour and consistency, it contains a considerable quantity of saccharine matter and some mucilage, from which it derives its softness and viscosity. It ferments very readily and yields a strong wine or liquor called mead. Honey is much used in making preserves and confectionery also in medicine as a demulcent against hoarseness, catarrh &c., and externally to promote suppuration. It is clarified by being melted in a water bath and strained while hot through flannel previously moistened with warm water. In this form it is used to sweeten certain medicines. It is more aperient and detergent than sugar, and is particularly serviceable in promoting expectoration in disorders of the chest. Honey of lozal is made by mixing 64 grains of brandy in fine powder with 2 ounces of clarified honey and is used chiefly as a local application to aphtha or ulcers in the mouth. Lymel is made by liquefying 40 ounces of clarified honey by heat, and then adding 5 fluid ounces each of citric acid and distilled water. It is used as an expectorant and diaphoretic. L. : 2 fluid drachms

Hooing cough, *hō-pīng* [Ang Sax] a cough in which the patient hoots or whoops with a deep inspiration of breath. On account of the violence of the cough attending this disease, the term *pertussis* has been applied to it, and a account of the recurrence of the cough in paroxysms, it is also known by the name of *chan* or *kunk* in the *Syriac*.—The symptoms accompanying with a simple croup indicated by a cough, and the expectation of a lumpy fluid by redness of the conjunctive, a violent discharge from the eyes and nostrils, hæmorrhages and occasional sneezing. These symptoms are generally accompanied by slight feverishness and the patient is low-spirited and languid. Thus far the disease closely resembles a common cold, but after the end of about one or two weeks the character of the affection changes. The fits of coughing become more long and frequent a sensation of tickling in the larynx and trachea accompanies each fit, during which the inspirations are irregular, especially in the case of children whose faces bear an expression of anxiety and fear. When the fits come on they cling tightly to the persons or objects near, and if asleep start up. The efforts of coughing then become so rapid and violent as to take away the breath during the intervals between it is difficult to perceive any inspiratory movements, exhibiting at times what the cough is interrupted by a peculiar whining sound, which has given this disease its

Hops

common name. In young children hooping-cough often becomes complicated with other diseases. The most common complication with children at the breast is cerebral congestion, giving rise to convulsions. Hooping cough prevails as an epidemic disease, and children from birth to the period of second dentition are chiefly liable to it. Adult persons, however, are not exempt from it, and it sometimes occurs even in old age. The disease is very contagious, and when it once finds admission into a house very few young persons, who have not had it previously, escape. It rarely affects the same individual twice although this sometimes occurs. *Treatment.*—Hitherto no treatment of hooping cough has been discovered by which its progress can be arrested, its severity, however, may be mitigated and its duration diminished. It must necessarily run a certain course, which often, in spite of skilful treatment, may be long. Ordinarily, it continues from six weeks to three months, but sometimes it may last for six months, or even longer. The administration of emetics in the earlier stages of the disease is often efficacious and tardy clysis on account of its easy solubility and certain action, seems to be best suited for the purpose. Mild sudorative expectorants may also be given, as tincture of squills and camphorated tincture of opium, but as a rule unless complicated with other disease of the chest or head little medical treatment is required. The patient should be kept in a constant temperature of 65°, and the bowels kept moderately open. The diet should always be of the mildest description at the commencement but afterwards it may be of advantage to adopt a more tonic and nourishing regimen. In protracted cases nothing appears to be so effective in putting a stop to the cough as change of air, which frequently succeeds when all other methods have failed.

Hops (*See Humulus*)

Hordeum hordeum [Lat.], barley, a genus of the nat. ord. *Gramineae*. The principal species or varieties of cereal barley in cultivation are practically distinguished by the arrangement of the seeds, as two rowed, four rowed, and six rowed. Barley is used dietetically in the manufacture of bread, and, in the form of malt, most extensively in the production of ale, beer, and ardent spirits. It is the common grain in use for the latter purpose in this country. Barley deprived of its husk constitutes Scotch, hulled, or pot barley. When both husk and integuments are removed, and the seeds rounded and polished they form pearl barley, and this, when ground, is called, dent barley. *Dentocornus hordei*, decoction of barley, or barley-water is made by washing 2 ounces of pearl barley in cold water, rejecting the washings, and then boiling the washed barley in 1½ pint of distilled water

Humour

for 20 minutes in a covered vessel, and straining.

HORNBBOUND (*See MARRUBIUM*)

Hospital *hos'pit'al* a name given to a building set apart for the purpose of receiving sick, infirm and helpless persons the building itself being endowed at the expense of charity and medical attendance also provided gratuitously for the *inpatients*. In London there are many of these noble institutions nearly all of which are very wealthy, and are supported by endowments, apart from general charity. In Low's "Charities of London for 1861" it is stated that there are 24 charitable hospitals, making up 3,26 beds for inpatients, which, during the year 1861 received 1,199 inpatients, and had 399 146 outpatients under treatment. There are also 61 charitable institutions which come under the same heading, and which may be thus analysed—
Germans 1 women 1 Spinners, 1 fever 4 consumption 8 lying in 4 diseases of women and children 3 for sick children, 3 incurables and paralytic 1 small pox and vaccination 5 ophthalmic 1 for diseases of the ear 9 infusions and internal afflictions, 4 diseases of the skin 3 convalescent asylums 1 lunatic asylums 1 idiot institutions, for orphans 1 h. m. hospital 1 mesmeric, 1 dental and 1 sanitary institutions. The total number of patients and infirmaries receiving patients at that date was forty-one, of which three had been in operation for over ten above 200 years and seven from 50 to 100 years. One of the greatest characteristics of the London hospitals is that they are open to the reception of accidents or urgent cases at all hours, *without letter of recommendation*. The construction of hospitals is a subject which has of late years much engaged the thoughts of medical physicians, and sanitary reformers, and many systems have been proposed as emendations on the old methods. The *passion*, *cottage*, and *corridor* styles have been brought up in contrast, but it would be impossible in the present article to enter upon their different advantages. Suffice it to say that hospitals for the sick should be advantageously situated, well aired, thoroughly drained, soundly built, and not hemmed in by other buildings, and the rooms and galleries for the reception of the patients should be lofty, well lighted and effectively ventilated.

Hydrococcus, hæmorrhæus [Lat.], a term applied to the bone of the arm. (*See Arm*)

Hæmorrhæus, hæmorrhæus [Lat. *humus*, the ground, because moisture was supposed to spring from the ground] a general name for any fluid but more especially applied to the fluids of the human body and often to those in their morbid state. The term is used without any reference to disease in speaking of the fluids of the eye. (*See Eye*)

Humulus.

Humulus, hu'-mu-lus [from Lat. *humus*, the ground, as, unless trained or supported, it creeps on the earth], the Hop, a gen. of the nat. ord. *Cannabaceæ*. The common hop-plant, *H. lupulus*, has a perennial root and canary-yellow stems, which twine from right to left around any convenient support. The male and female flowers are generally on separate plants. The former are in loose panicles; the latter in dense catkins or strobiles, with membranous concavo bracts. The hops of commerce consist of the female flowers and seeds of this plant. Their principal consumption is in the manufacture of beer, and they possess three properties which particularly fit them for this use. First, they impart to malt liquors a pleasant bitter, aromatic flavour and tonic properties. Secondly, they give them a peculiar *headiness* often confounded with alcoholic strength, and thus save the brewer a certain proportion of live malt. Thirdly, by their chemical influence they clarify the liquors and check their tendency to turn sour. Hop-plants grown from root-stocks come to perfection in the third year from planting. They spring out of the ground about the end of April, and flower about the end of August. The strobiles are fit to gather from the beginning of September to the middle of October, the time varying according to the sort cultivated and the differences in the seasons. When picked, they are dried by artificial heat, in kilns, and then packed in bags or pockets. Upon the bracts and scales are numerous little yellow shining grains, generally roundish, or kidney-shaped. They have been termed *lupulin glands*, and are believed to be the most active parts of the hops. Of the cultivated hop there are many varieties, but in the principal English hop counties—Kent, Surrey, and Sussex—only about five varieties are extensively grown, the goldings, white-bines, Jones's grape, and calegate. Hops are used medicinally for their stomachic and tonic properties. They are, to some extent, narcotic; and a pillow stuffed with them is occasionally employed to induce sleep. The *infusion* (*Infusum Lupuli*) is made by infusing $\frac{1}{2}$ ounce of hops in 10 fluid ounces of boiling distilled water for 2 hours in a covered vessel, and then straining. Dose, 1 to 2 fluid ounces. The *tincture* ($\frac{1}{2}$ ounces of hops to 1 pint of proof spirit) is given in doses of $\frac{1}{2}$ to 2 fluid drachms. The dose of the extract is from 5 to 15 grains.

HUNGER, *hung'-ger* [Sax.] a peculiar sensation experienced in the region of the stomach, in consequence of the want of solid food. The sensation of hunger is at first rather agreeable, but it quickly becomes unpleasant, when prolonged. The sense of keen appetite is always delightful when there is a prospect of satisfying it; but that sticking in the stomach which ensues, soon carries us from uneasiness to absolute pain,

Hunger.

which rapidly becomes acute; and if aliment still be held back, the sensation produced is as if the stomach were being torn by pincers. A state of general exhaustion, feverishness, headache, light-headedness, often passing into madness, follows. The whole being seems absorbed in one desire, before which even maternal instinct has been known to give way, and mothers have disputed with their companions for the flesh of their dead infants. The physiological causes of hunger are not well understood, and great difference of opinion exists among scientific men on the subject. According to popular belief, the sensation of hunger is caused by the emptiness of the stomach, which, in the opinion of some physiologists, allows the sides of that organ to rub against each other, and the friction causes the sensation. This, however, is wrong, for the stomach is usually empty for some time before the feeling of hunger is experienced; and, as is well known, the stomach may be empty for days together, as in illness, without any sensation of hunger. Another theory is that the gastric juice accumulates, and attacks the walls of the stomach. This, however, has been proved not to be the case. Dr. Beaumont, in America, who made many valuable observations on a patient who had a hole in his stomach, produced by a wound, accounts for hunger thus:—"During the hours of fasting the gastric juice is being slowly secreted in the follicles, and retained in their tubes, thereby distending them; this distension, when moderate, produces the sensation of appetite, and when more powerful, of hunger." According to other writers, however, it would appear that hunger is related to the general state of the system, and also to the particular state of the stomach. The stomach of a fasting animal is pale, and in a state of obvious *atony*. No sooner, however, is food, or almost any irritant substance, introduced, than the pale surface becomes visibly congested, turgescens, and its secretions pour forth abundantly. With this rush of blood, the sensation of hunger passes away. It is therefore argued that hunger is in some way dependent on the state of the circulation of the stomach. In all living organisms, *waste* and *repair* go on with an incessant and reciprocal activity. Thus the body is like a furnace, in which the fuel is constantly burning; and hunger is the instinct which teaches us to replenish that furnace. But although the want of food causes hunger, it does not itself *constitute* hunger; food may be absent without the sensation of hunger. Violent emotion, of grief, or joy destroy the sense of hunger; and the sensation may be allayed by opium, tobacco, and even inorganic substances, such as clay, although none of these can supply the deficiency.

Hybrid

of food. Want of food is consequently the primary, but not the proximate cause of hunger. The supervention of death through want seems to be coincident with the consumption of all the disposable combustible material, for the temperature of the body is maintained with little diminution until its fat is consumed, and then it sinks rapidly, unless kept up by external heat, so that death by starvation may be really said to be death by cold. A French philosopher made several experiments on the subject of inanition, according to which it appears that death from hunger occurs when the waste reaches $\frac{1}{4}$ that is to say, supposing an animal to weigh 100 lb, it will die when its weight is reduced by fasting to 60 lb. Death may possibly occur before that stage, but he cannot exist after it. In the case of human beings, death usually occurs in from 6 to 10 days of total abstinence from food and drink, but much depends upon the peculiar constitution of the individual his age, health habits &c. Some die on the fifth or sixth day, while others can survive ten twelve or even sixteen days! There are many records of protracted fasting, but nearly all of them are in well-authenticated, and most of them are obviously fabulous. The aspect of a starving man is terrible. In the first place he grows excessively thin, and this thinness is not the leanness of lean men, but manifests itself by unmistakable emaciation. The face grows lividly pale, the cheeks sunken and all the vitality of the body seem to be centred in the feverish brightness of the eyes. The pupil becomes dilated and fixed in a wild stare which is never veiled by the eyelids. All movements of the body are slow and difficult, the hand trembles, the voice grows feeble, and the mind weak, while the poor sufferer, when asked what he feels, can only answer faintly that he is hungry. There is very little definite information to be gleaned concerning the agonies endured by starving men. Those who have undergone the horrors are seldom able to recount them. It is a remarkable fact that a deficient supply of food produces an incapacity in the stomach to digest even the small quantity which may be presented to it. Also a deficient supply of food seems to check the elimination and removal of waste materials from the system and hence such persons are particularly liable to pestilential diseases. Hence, too, the bodies of such as are suffering from starvation emit a peculiar fetid odour, and after death pass rapidly into decomposition.

Hybrist., *hybrid* [Gr. *hubris*, *an injury*, because its nature is tainted] is a term applied to the offspring of two animals or plants of different species. Hybrid animals not plants propagate in species

Hydatid., *hy-dat-id* [Gr. *hudor*, a vesicle,

Hydrocephalus.

[*hudor*, water], a term applied rather vaguely to various cyst like productions, which are sometimes found in the bodies of men and animals. In 1686 Hartman first discovered that many of the bodies of cyst-like tumours were distinct parasitic larvæ. The discovery excited little attention till Linnaeus and Pallas took up the investigation. Since that time the subject has been studied by many eminent naturalists. Hydatids are principally found in the bodies of mammals, and rarely in those of the lower animals. They occur in any part of the body, but are seldom met with in the mucous cavities and paravertebrates. They are usually found concreted sometimes in great numbers, within large cavity, to which they are not attached, and they may increase and multiply till they destroy life by their immense bulk and pressure. They sometimes open a way for themselves through the surlic, and escape through an ulcer. Sometimes an opening may be made for them when they are known to be present. Treatment — Little is yet known of this, but no treatment to be of service in order to get rid of hydatids. As their presence is doubtless owing in great measure to a disordered state of the system efforts should be directed to restore the body to a state of health. Probably iodide of potassium is recommended by some may be found of service in killing the aninals by absorption of the fluid contained in their cysts. When situated near the surface an opening may frequently be made for their discharge.

Hydrocolut. *hy-dro-go-lut* [Gr. *hidr*, water, *agel*, I expel] a term applied to violent cathartics, which bring away a large quantity of watery secretion from the intestines. (See CATHARTIC.)

Hydrocyanum. (See MERCURY.)

Hydrastis., *hy-dra-stis* [Gr. *hudor*, water], a gen of the nat. ord. *Ranunculaceæ*. One species only is known, namely, *H. canadensis*, the golden seal, orange root, or ground raspberry; a low perennial herb indigenous to North America. The preparations of this plant we introduced in America, and are stated to have a specific influence over the mucous surfaces and to be useful in gonorrhœa, gleet, dyspepsia, piles, constipation, oph. illus., catarrh and various other diseases. There can be no doubt as to its valuable tonic properties.

Hydrocephalus., *hy-dro-ef'-a-lus* [Gr. *hudor*, water *kephale* the head], is a term applied to dropsy, or water in the head. Physicians distinguish it into two kinds, the acute and the chronic, both of which are almost exclusively confined to infancy and childhood. Acute hydrocephalus is an inflammatory disease rapid in its course, and requiring decided treatment; chronic hydrocephalus, on the other hand, may go on for many years. Symptoms — In acute hydrocephalus, the child is usually restless

Hydrocephalus.

and frotful, the skin is hot and dry, the pulse quickened, the appetite impaired, and the bowels constive. The eyes are dull and heavy, the face flushed, and the child complains of pain and heaviness of the head. After a time, the symptoms become more marked. The pain in the head becomes more intense, the restlessness is much increased, the expression of the countenance is altered, especially that of the eyes, which are often directed irregularly, with the pupils unequally dilated. The appetite is lost, and sometimes there is vomiting. The sleep is very much disturbed, and frequently the child awakes with a loud scream; the pulse is low and irregular, and often convulsions take place. The disease frequently proves fatal in two or three days, or even less; but sometimes it is protracted over two or three weeks, depending chiefly upon the age and strength of the child and the violence of the attack. *Treatment.*—The treatment of this disease must necessarily depend upon the strength and condition of the patient, the great object being to subdue the inflammatory action of the brain. Blood is to be freely abstracted by leeches, and some recommend the use of the lancet, though in general this is to be avoided. Active purgatives are also to be administered, and cold water cloths applied to the head. When the active symptoms of the disease have been overcome, the system is to be gradually restored by tonics, cautiously administered. Chronic hydrocephalus differs from the other not only in its progress being much slower, but from being rarely, or only slightly, attended with inflammation, and from there being always more or less of a collection of watery fluid in the brain, which is not invariably the case with the former. The chronic form is frequently hereditary, occurring in the children of weak or serofusca parents, and it usually makes its appearance before, or speedily after, birth. The fluid sometimes amounts to many pints, giving the head a very large and unightly appearance. It is sometimes lodged in the membranes enveloping the brain, but more frequently it is contained in the ventricles and other cavities of that organ itself. This disease is always attended with more or less of intellectual derangement. The vision is usually considerably impaired, with squinting; speech is imperfect, and the power over the voluntary muscles is partially lost. These symptoms gradually increase, convulsions and paralysis at length make their appearance, and death at last supervenes. The duration of the disease is extremely various; sometimes it may terminate fatally in a few months, at other times it may go on for many years. From the early period at which this disease usually makes its appearance, little can be done to arrest its progress. Purgatives, diuretics, and mercury are the means usually adopted.

Hydrogen.

In some cases, good is done by bandaging; and, as a last resource, puncturing is not unfrequently successful.

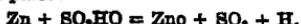
Hydrochloric Acid., *hi-dro-klo'rik* [from hydrogen and chlorine]. *Synonyms*:—*Spirits of salts, marine acid, muriatic acid, chlorhydric acid.* It is a colourless gas, of peculiar pungent odour, and an intensely acid taste, irritating the eyes and lungs considerably. It is heavier than air, having a spec. grav. of 1.260. Water absorbs 480 times its volume of this gas at 40°, increasing in volume by one-third, forming a colourless fuming liquid, known as hydrochloric acid in the laboratory. The hydrochloric acid of the Pharmacopœia is a nearly colourless and strongly acid liquid, emitting white vapours, having a pungent odour, and a spec. grav. of 1.16. It forms an ingredient in a number of pharmaceutical preparations. The diluted acid is formed of 3 fluid ounces of the acid and a sufficiency of distilled water to make 26½ fluid ounces at 60° Fahr. It is frequently given in dyspepsia, particularly when arising from a morbid condition of the gastric juice, and sometimes in cases of putrid fever. Dose, from 10 to 20 minims.

Hydrocyanic Acid., *hi-dro-si-an'-ik* [from hydrogen and cyanogen]. *Synonyms*:—*Prussic acid, cyanhydrin acid.* This important compound is composed of equal volumes of hydrogen and the compound gas cyanogen. It is prepared by submitting a cyanide to distillation with a strong acid. Diluted hydrocyanic acid, containing 2 per cent. by weight of the acid, is given in doses of 2 to 8 minims, as a sedative and anodyne. It is particularly useful in spasmodic coughs of every description, particularly in asthma, chronic bronchitis, and hooping cough. It has also been employed with success in palpitation, and other diseases of the heart, in affections of the stomach and neuralgia. In cases of poisoning with hydrocyanic acid, it acts so quickly and powerfully as to afford little time for the operation of antidotes. The means usually recommended are the pouring of cold water on the head and spine, keeping up respiration artificially, cautiously inhaling largely diluted chloroform, taking hot brandy and water, and the ammonia tincture of iron.

Hydrogen, *hi-dro-jen* [Gr. *hudor*, water; *genous*, I produce], in Chom., symbol H; equivalent 1; spec. grav. 0.0002. Hydrogen is an elementary substance, first isolated as a constituent of water by Cavendish, in 1766. It is a colourless, transparent tasteless, inodorous gas, permanent at all temperatures, and resisting all efforts to liquefy it. It is the lightest substance in nature, being 1/17 times lighter than air, and occupies 1/16 of a cubic inch of it weighing only 2.14 grains. In combination with water, it is most extensively distributed throughout nature. It also exists in combination with carbon in most inflammable minerals. It is an im-

Hydropathy.

portant element in all organic substances, and enters into the composition of most substances in daily use, whether drawn from the mineral, vegetable, or animal kingdom. Having a very great attraction for oxygen and chlorine, when in the nascent condition, it is much employed in the laboratory for deoxidizing or dechlorinating purposes. It is prepared in a variety of ways, the most usual being by pouring dilute sulphuric acid on granulated zinc or iron clippings, when the following reaction takes place:—



It may also be prepared by passing steam over red-hot iron filings, by plunging sodium or potassium into water, or by electrolysis of water; all of which methods are more scientifically interesting than practical. Mixed with air, it may be breathed without any other effect than raising the pitch of the voice many notes higher. Mixed with oxygen, olefiant gas, or atmospheric air, it forms an explosive compound of great power. Hydrogen is used principally in the oxyhydrogen blowpipe. The compounds of hydrogen are water, ammonia, hydrochloric acid, and many others.

HYDROPATHY, *hi-dro-pa-thy* [Gr. *hudor*, water, and *pathos*, disease], is a mode of curing disease by means of the application of water. The system owe its origin to one Vincent Priessnitz, who, in 1826, established an institution at his native place, Graefenburg, in Austrian Silesia, for the cure of diseases on this mode. The system soon spread, and now there are in this country a number of large hydropathic establishments. Without claiming for the system all that its votaries demand, there can be no doubt that it is of the greatest benefit in a great number of cases. Particularly is it of service in cases of indigestion, nervousness, an impaired constitution, a too full habit, or in such as have been lying freely, without taking much exercise. The system of dietary and exercise that is kept up at these places is, perhaps, not less conducive to a cure than the baths. Having, under the head *Baths*, already noticed at length the different forms of baths and the great importance of bathing, little more remains for us here than to notice shortly some of the forms in which it is employed as a remedial agent. These are very various. Besides the ordinary bath and the shower bath, one of the most common is the douche bath, in which a single jet of water, varying in size from the thickness of a quill pen to that of a man's arm, is projected with great force, either from above, below, or the side, upon a particular part of the body. The sitz bath is taken sitting; besides which there are the foot-bath, hand-bath, &c. Sometimes, when the patient is sitting in a warm or tepid bath, cold water is poured

Hydrophobia.

over the head and upper part of the person. Pieces of coarse linen, saturated with cold water, are also applied to the skin, and covered over with dry cloths, and usually re-moistened several times a day. Wheated sheet packing is one of the characteristics of the system. It consists in the patient being closely enveloped in a sheet, wrung out of cold water, and then covered over with dry blankets. The great importance of hydropathy consists in the healthy stimulus which it gives to the nerves, bracing them, and acting as a tonic and soother to the whole system.

HYDROPHOBIA, *hi-dro-fob-e-a* [Gr. *hudor*, water, and *phobos*, I fear], is a disease occasioned by the bite of a rabid animal, and so called from the great dread that those who suffer from it manifest at the sight of water. The dog, cat, fox, and wolf are the animals among whom this disease is most common—among whom it is natural; but there are, perhaps, no animal to whom it is not liable of being communicated, as it is to man. A dog who is suffering from this disease becomes solitary, morose, and sullen; runs about wildly, and bites at whatever comes in his way; but his respect for his master is at first unaltered. As the disease advances he becomes more furious, gnawing and biting at whatever comes in his way; he forgets his master, breathes quickly and heavily, his tongue hangs out, his mouth continually open, and discharges a large quantity of froth. In this state he seldom lives more than four-and-twenty hours. The poison exists in the saliva of the rabid animal, and may be communicated either by a bite or by licking a wounded part. *Symptoms*.—After the poison has been received, the wound usually heals up in the ordinary way. At a period, however, varying from a month or six weeks to perhaps eighteen months, symptoms of the disease begin to manifest themselves. The part becomes painful, red, and swollen, and shooting pains are felt, extending from it to the central parts of the body. Very soon after this (within a few hours perhaps, but certainly within a few days) the specific constitutional symptoms make their appearance; he is hurried and irritable; speaks of pain and stiffness, perhaps, about his neck and throat; unexpectedly he finds himself unable to swallow fluids, and every attempt to do so brings on a paroxysm of choking and sobbing, of a very distressing kind; behold. The symptoms rapidly increase in severity. The nervous irritability, ^{especially} extreme, the paroxysms are ^{only} by violent, and are excited not ^{only} by the attempts to swallow liquid, even the ^{smell} of the wa-^{sight} or sound of the ^{noise} of a mirror ^{or} of a polished surface, ^{or} of a gust of the eyes, or the ^{feeling} of being sufficient to cross the face, ^{especially} takes place in it. Death ^{usually} occurs

Hydrops.

Twenty-four hours, but sometimes it may be protracted to the fifth or sixth day, usually however it terminates fatally on the second or third day. *Treatment*—Nothing can be said to be known of the nature or character of this disease and as little is known regarding its treatment. Various means have been tried, but few, if any of them, have met with any success and none of them have recovered general adoption. It is not however every one that is bitten by a rabid animal that has hydrophobia. John Hunter records that in one case twenty-one persons were bitten by a mad dog, and only one of them had hydrophobia, and others have come to the conclusion that on an average only one person in twenty-five bitten will have hydrophobia. In the treatment of this disease the great thing is to remove the poison itself if it has extended itself into the system. This is best done while possible, i.e. even if the wounded part can be taken that every portion of it is removed. While it is impossible to use the knife effectually, a powerful caustic should be applied freely over the whole surface of the wound so as to destroy the effect of the poison. As the poison is not very active, these means are usually effective. When employed at once after the receipt of the wound, but of course in such circumstances all due haste is to be adopted and it is well before the arrival of medical assistance to keep carefully washing the part with cold water.

Hydroc or Urobor. (See DROST.)

HYDROGENIUM ACID, *hydrogeni'ju m*, or sulphurated hydrogen, symbol H_2S , equivalent to 17 combining volume 2, specific gravity 1.072. This important compound of sulphur and hydrogen is generally prepared for use by submitting one of the metallic sulphides to the action of an acid, when it is disengaged in great abundance. For general purposes, the sulphide of iron is broken into small fragments, and placed in a bottle, a mixture of sulphuric acid and six or seven times its weight of water is added to it, and the gas gradually passes over. It is a transparent colourless gas, having the characteristic odour of rotten eggs. It is highly poisonous in a concentrated form, and is fatal to the lower animals, even when very much diluted. It is a constituent of many springs, the baths of Aix la Chapelle and Harrogate owing their efficacy to this gas.

HYDROTHERAL. (See DROST.)

HYGIENE, *hi'jeen* [Gr. *hygias* I am in health], is applied to that branch of medicine which relates to the preservation of health. (See SANITARY SCIENCES.)

HYOM RONA, *hi'om'ra* [Lat. *as hydros*], is a bone between the root of the tongue and the larynx, so called from its supposed resemblance to the Greek letter. It consists of a body, two hor's, and appendages,

Hypochondriasis.

and serves to support the tongue, and afford attachment to a variety of muscles.

HYOSCYAMUS, *hi'os'kam'us* [Gr. *hoskymos*], Henbane, a gen. of the net-ord. *Astroaceæ*. The common henbane, *H. niger*, is an indigenous plant, growing on waste grounds, banks and commons. It is glandular and viscid and exhales a peculiar odour which is strong and powerful. The whole herb possesses narcotic properties, and has been employed medicinally from the earliest times, as a narcotic, anodyne, and soporific. It is sometimes used by oculists, in place of belladonna, to dilate the pupil. When swallowed in sufficient quantity, it is stated to cause loss of speech, disturbance of vision, distortion of the face, coma, delirium, phantasm, and paralysis. The solution of potash, or other caustic alkali is said to be the best antidote. The leaves only are used in regular practice, and should be gathered when about two-thirds of the flowers are expanded. They are given internally in the form of powder, or in extract or tincture, and applied externally in fomentations or cataplasms. The dose of the powder (extract) is from 5 to 10 grains of the tincture ($\frac{1}{2}$ ounce of leaves, in coarse powder, to 1 pint of proof spirit), to 1 fluid drachm. The extract forms one third part of the jell of coloquintid and hyoscyamus. The fumig of the seeds heated in the bowl of a *thermos* pipe, were formerly inhaled to allay toothache.

HYPÆR HI'per [Gr. *huper*, over, beyond], a Greek preparation which is compounded with other words in order to denote excess, or anything beyond, or over and above, the original quality of the word to which it is added as *hypæmia* in excess of blood in any part or *congestion* as *hypætopy* a morbid increase of any organ, without change in the nature of its substance, arising from an excessive nutrition.

HYPCHONDRIASIS, *hi-pon'kondri'asis*, in Mod. is a disease characterized by extreme sensibility of the nervous system, leading the patient to believe himself to be suffering from some terrible and imaginary disease, or to be much worse than he really is. The ideas of such persons often partake of the most extravagant character. He may fancy that he is immensely tall, or inordinately small; that he is heavy as lead or light as a feather, that he is composed of glass, or is a lump of butter. They are also extremely timid and their fears are exercised upon trifles, or are altogether groundless. They dwell constantly upon their own sufferings, and are usually morose, peevish, suspicious, &c. in a sanguineous, and frequently import their wearies and dearest friends of designs upon their life. There is frequently also functional derangement of certain organs, especially of those connected with the nutritive processes. The causes of this disease are various, arising, as it does usually, from

Hysteria.

an impaired condition of the nervous system. Young men of studious habits are very apt to suffer from this disease. Those too, who, from want of occupation and a due amount of exercise, acquire a luxurious habit, often fall a prey to it. The cure must of necessity vary somewhat, according to the nature of the disease. In general, the great thing is to withdraw the patient's mind as much as possible from himself. For this purpose, cheerful society and change of scene should be adopted. The system ought to be strengthened by tonics, and exercise in the open air. If it arises from idleness and luxury, the great cure is plenty of active exercise and a spare diet. In all cases the state of the digestive organs should be attended to, and the bowels kept in a strictly normal condition.

Hysteria, *hus-té-re-a* [Gr. *hystera*, the womb], is a nervous affection to which females are particularly subject, and which is generally connected with uterine irregularities. It occurs most frequently with persons between the ages of fifteen and forty-five and fifty, and is most common with single women of weakly constitution, and who lead sedentary lives. **Characteristics.**—This complaint appears in such a variety of forms, and simulates such a variety of diseases, that it is scarcely possible to give a just character or definition of it. There are few maladies that are not imitated by it, and whatever part it attacks, it assumes the appearance of the disease to which that part is liable. In general hysteria, the attack is usually preceded by depression of spirits, anxiety of mind, difficulty of breathing; a ball is felt advancing upwards from the stomach into the throat, and threatening to stop the passage of the air; then the trunk and limbs of the body become violently convulsed, the patient sobs and cries, and occasionally bursts out into fits of laughter. After a time, these symptoms gradually cease, a quantity of wind is evacuated upwards, with frequent sighing and sobbing, and the woman recovers the exercise of sense and motion, frequently without any recollection of what has taken place during the fit,—feeling, however, a severe pain in the head, and a soreness all over the body. A fit of hysteria may last from a few minutes to several hours, or even days. It is to be distinguished from an epileptic fit by the absence of foaming at the mouth, by the sobbing and crying, by the milder expression of consciousness, and by its being gradual, and preceded by the sensation of a ball. Hysteria assumes various other forms; as palpitations of the heart and difficult respiration, pains in different parts, as the head, left breast, &c., different forms of paralytic affections, &c. The hysterical fit, however alarming and dreadful it may appear, is rarely accompanied with danger, and never

Ichor.

terminates fatally unless it passes into epilepsy, or the patient be in a very reduced state. **Treatment.**—During the paroxysm, the first care is to see that the patient do no injury to herself, by striking her head or hands against any hard substance, or to others, by biting. If the fit be slight it may frequently be arrested by dashing cold water on the face, or by filling the mouth with something of an unpleasant taste, or by applying some stimulating scent to the nostrils. If more serious, the face and neck ought to be freely exposed to the air, the forehead bathed with wet cloths, and a slight purgative administered. In cases of hysteria marked by local pain, relief is given by the application of opium to the part. In contraction of the muscles, it may be relieved by administering chloroform. In some cases, hysteria is owing to plethora, or fulness of blood; in others, to deficiency of it. In the former case, a spiky diet, exercise, and occasional purgatives are recommended, with, sometimes, the actual abstraction of blood; in the other case, the system is to be kept up and sustained by nourishing diet and tonics, particularly iron. The patient's mind is to be kept as cheerful and tranquil as possible, by agreeable company; and all tendency to excesses, or irregularities kept in check. The great cause of the prevalence of this disorder among our young females is owing to the defective physical and mental training to which they are subjected. Were their physical frames developed and strengthened by proper exercise, and their mental powers kept in proper subjection, there would be much less of hysteria.

I.

Ice, ice, the familiar and also the technical term for water in the solid state. Water, on being cooled, contracts until the temperature has fallen to about 39° Fahr., when it begins to expand. At the freezing point, 32°, under ordinary circumstances, ice is formed, which, in consequence of the continued expansion, has only 0.93 of the specific gravity of water at 39°. The ice, therefore, floats upon the surface. The uses of ice are various in all parts of the world; either for cooling wines and other beverages, or for confectionery purposes. In Medicine ice is frequently used, externally, to allay pain or inflammation, to stop hemorrhage, or to impart tone to relaxed parts. Internally, it is of service in checking vomiting or hemorrhage, and in allaying irritation or inflammation, in the stomach. It is also, given in typhus and other fevers.

ICELAND MOSS. (See Cetraria.)

Ichor, *ih'-or* [*Ir.*], a term used to denote

Ichthyosis.

g thin, aqueous, and acid discharge from wounds, ulcers, &c

ICHTHYOSIS., *sk the o sis* [Gr. *ichthys*, a fish] a disease of the skin, which takes its name from the surface of the cuticle suggesting the skin of a serpent or fish. It is distinguished from leprosy, and psoriasis by the absence of deciduous exfoliations, distinct or partial patches, and the constitutional disorders which more or less accompany those diseases. It appears principally on the external parts of the limbs and round the joints, as of the knee or elbow. The scales rest on an uninflamed surface and there is no heat pain or itching. It is not common and the remedies known are only palliative. Warm bathing and the use of trichloroform and glycerine lotions to rub the skin.

ICHTER. (See JAUNDICE.)

IDIOSYNCRASY. *id e syn kras i* [Gr. *id os* one's own *galias* an affectus] a term applied to a disease which is not dependent on any other complaint and therefore opposed to those like rheumatism, symptomatic.

IDIOSYNCRATIC. *id e syn kri tik* [Gr. *id os* proper *men* with *kra*stis temperament] means a peculiar temperament in regard to body, a state of constitution peculiarly susceptible to be affected by certain things which in general produce no effect upon others. In this way some persons are evidently affected by honey, coffee, butter, &c. What are commonly called antiphatics belong to this class. (See ANTIPATHY.)

IDIOT. (See INSANITY.)

IDIUM, *id e um* [Gr. *eleo*, I turn about, from its numerous convolutions] in Anat. is the name given to the last portion of the small intestine, which terminates at the valve of the cæcum. (See IMMIXTUS.)

ILEUS, OR ILLAC PARENTHESIS, *il e us il e ek* [Lat. *ileaca passio*] in Med. is a disease in intestinal disease characterized by violent straining pain, accompanied with retching and spasms of the abdominal muscles, constipation, and vomiting of fecal matter. **Causes** — It arises from many causes and is generally symptomatic of some other disease. Among the most frequent causes of this disease are strangulated hernia, intussusception or the retention of one part of the bowel within another, unnatural adhesions between adjacent folds of the intestines, inflammation &c. **Treatment** — The medical treatment consists in removing the existing cause. The principal means to be employed are cathartics, aperients, laxatives and glycerine. Dry and humid fomentations warm baths, and warm and copious glycoses afford the most reasonable means of success. Sometimes obstruction is overcome by injecting large quantities of fluid into the bowels, and manipulating the intestines by pressure through the abdominal walls.

ILEX, *il e eks*, the Holly, a gen. of the nat-

Indigofera.

ord *Aquifoliaceæ*. The species *I. Aquifolium* is one of our most beautiful shrubs. It is found in most parts of Europe, and in North America, Japan, and Cochin China. The leaves have been employed in intermittent fevers and are also said to be a preventive a sunstout. The berries are purgative and emetic.

ILIUM OS. (See INNOMINATUM OS.)

IMPERITIGO, *im pe ri go* [Lat. *fr m imperitio*, to infect], in Mod., is an eruption of yellow itching pustules, appearing in clusters, and terminating in a yellow, thin, scaly crust. It is also known as humid or moist tetter, and discharges a thin acrid ichor. It occurs on all parts of the body, but most commonly on the extremities. Frequently it occurs on the face or head and sometimes in children so thickly as to appear like a mask. It is almost confined to the lower orders and, especially to children that are ill fed and unrobust. A variety of it is produced by the action of certain irritants upon the skin, as on the hands of those who work among agars, known as the grocer's itch, also on the hands of bricklayers, known as the bricklayer's itch. The eruption is not contagious. The treatment consists in attention to the general health, a mild and generous diet without stimulants, cod liver oil, and tonics especially quinine, mild aperients or, when there is much inflammatory action, purgatives and a frequent use of the warm bath. The best local application are lotions of extract of poppies, or the oxide of zinc, and zinc ointment.

INCISORS, *in'kis orz* [Lat. *incisor*, from *incido*, I cut], the name given to the four front teeth in each jaw, from their use in cutting the food. (See TEETH.)

INCUBUS, OR NIGHTMARE, *in'ku bus* [Lat. *incubo*, I lie upon] is a distressing sensation sometimes experienced during sleep, and usually accompanied by frightful dreams. The patient imagines he is pursued by some enemy or wild beast, or he endeavours to escape from some imaginary danger, but cannot, there is a dreadful weight upon his chest, he strives to cry out, but is unable at length he awakes in terror, and seeks great relief. Nightmare is most frequently caused by a heavy supper just before going to bed, dyspepsia, mental irritation, great fatigue, lying in an uneasy position, may also occasion it. The cure depends on the avoidance of these causes and attention to the state of the stomach.

INDIAN HEMP. (See ANNABIS.)

INDIA RUBBER. (See CAPUT CUCOU.)

INDIGATION. (See DYSPEPSIA.)

INDIGO (See INDIGOFERA.)

INDIGOFERA, *in di gof' er a* [Indigo, Sand Lat. *fero* I bear], a gen. of the papilionaceous division of the nat. ord. Leguminosæ. The species *I. tinctoria*, *cassia*, and probably some others, yield commercial indigo, one of the most important of dyer's mate-

Infancy.

INFANTS Indigo is very poisonous; but in proper doses it has been employed in epilepsy and rickets, though its value in such diseases is by no means well established.

INFANTRY — Infants, in consequence of the delicacy and pliability of their structure, are liable to a number of disorders, and require very great care in their management. The diseases to which they are more particularly liable are thus classified — 1 Disorders of the stomach 2 Disorder of the bowels 3 Exhaustion 4 Febrile affections 5 Exanthematos disorders, of such as are attended with eruptions of the skin 6 Affections of the head 7 Affections of the throat or chest 8 Affections of the abdomen or belly. The earliest indications of any of these are to be carefully looked for, and means taken directly to remove them. Many children's disorders proceed from teething, and may be removed by lancing the gums. The medicines for infants are few and simple, as rhubarb, magnesia, maunds, castor oil, for aperients, senna, powder or wine, as an emetic, dill water, or other simple carminative, for flatulence. The clothes of children should be light and easy, adapted to the climate and season. All constrained postures and long confinement to one position should be avoided. It is a great error to give a child the breast or bottle too often, once in three or four hours will generally be enough. In all cases where possible, or when there are not strong reasons to the contrary, the mother should nurse her own children. "To every mother," says Dr. Marshall Hall, "is to be committed the care of her own infant, in its largest and broadest sense. She is first to submit herself to all those rules of diet, medicine, exercise, and quiet which are essential to ensure her own good health. She is then to supply her own infant with milk, and with warmth, and for this latter purpose she should lay it by her own side in the night. She should, in the third place, become the superintendent of its health, detecting the first signs of indisposition, and seeking immediately for the remedy."

INFANTICIDE, OR CHILD MURDER, *infant'-i-sid'*, has been practised from very early times. Among certain of the Greek states, it was the practice to expose or destroy weak or deformed children. In Rome also it was common to expose or put to death children. In the present day, the Chinese are chiefly notorious for the extent to which they practise this crime; though, unfortunately, the practice prevails to a considerable extent in our own country. One of the most difficult questions of medical jurisprudence is to ascertain the murder of a child newly born. It has first to be determined whether the child was born dead or alive, and next, whether its death was occasioned by vice, or was the result of natural

Inflammation.

causes. If it be proved that the child was born alive, and subsequently destroyed, either by violence or wilful neglect, the offence is murder, and punishable accordingly.

INFECTION, *in-fek'-shun* [Lat. *infusio*], is the propagation of disease by means of deleterious or offensive exuvia contained in the atmosphere. The offensive matter may either proceed from decomposition of animal or vegetable substances, or may emanate from the bodies of persons affected by particular diseases. The presence of some of these agents may be recognized by the smell, of others only by their mischievous effects. The most important means of dissemination is ventilation. Various chemical agents are also employed for this purpose, as chlorine, chloride of zinc, perchloride of iron, sulphuric acid, &c. (See CONTAGION, DISINFECTANTS.)

INFIRMARY, *in-flir'-ma-re* [Lat. *infirmus*, infirm], is an hospital for the reception and medical treatment of the sick poor. Fortunately, in almost all of the considerable towns of this country, there are now establishments of this description, supported either by public subscriptions or by private endowments (See HOSPITAL).

INFLAMMATION, *in-flam'-ma-shun* [Lat. *inflammatio*, from *inflammo*, I burn], is a prematurely hot, red, swollen, and painful condition of any portion of the body. It is usually distinguished by a particular name, according to the part which is attacked, as *pneumonia*, inflammation of the pleura, *peri-tonitis*, of the peritoneum, *gastritis*, of the stomach, *hepatitis*, of the liver, &c. When the inflammation is general, it takes the form of fever. **Causes — Inflammations may be produced by various causes — by external injury, as a cut, bruise, or burn, by the action of some chemical or other agent, as poisons, alcoholic liquors, or from exposure to cold, wet, &c. **Characteristics** — The characteristics of inflammatory action are thus laid down but it is to be borne in mind that all these changes may not be present, or, at least, cannot be traced in every instance, and they are to be viewed as concurrent rather than as consecutive events.**

(1) There is a suspension of the concurrent exercise of function among the minute elements of the tissue involved, which is the primary lesion in the congestion of inflammation, and which immediately leads to (2) Inflammatory derangement of the blood, which, in the vicinity of the impaired tissue-elements, tends to assume the same characters as blood always assumes when it is in contact with ordinary solid matter, and which rends it unfit for transmission through the blood-vessels (abnormal adhesiveness of blood discs, &c.). (3) The arteries of the affected part are narrowed, and the blood flows through them with greater rapidity. (4) The same vessels subsequently become enlarged, and the cur-

Inflammation.

ment of blood slower, although uniform (5) The flow of blood becomes irregular (6) All motion of the blood ultimately ceases, and complete stagnation ensues (7) The *liquor sanguinis* may be caused through the walls of the blood vessels sometimes accompanied by the extravasation of blood corpuscles owing to rupture of the capillaries (Dr Aitken) Inflammation may be acute or chronic diffuse or circumscribed healthy with a disposition to heal and return to the natural state or unhealthy when on the contrary there is a disposition to ulceration &c It may terminate in one of three ways—in resolution in suppuration or mortification *Resolution* is the most desirable mode of termination being the gradual subsidence of the inflammatory action and the return of the parts to their natural state without any visible morbid change in their structure In *suppuration* the inflammation increases or to the formation of pus when the swelling increases in size becomes more red and shining then grows soft in the centre, and at length the matter makes its escape either through a natural or an artificial opening The most dangerous termination is in *mortification* which is caused by the inflammatory action being too violent for the vital process of the part in this case the pain is at first very severe than the bright red colour of the part becomes livid vesicles form on the surface the part abates, and death of the part ensues *Treatment*—The mode of treatment in inflammation will of course vary according to its seat, and the character of the general symptoms It should be directed (1) To check or diminish the inflammatory excretion (2) When excretion has congealed to further its removal from the system or (3) If this cannot be done to render its product as little injurious as possible At first then, whatever tends to stimulate or excite the vital functions is to be avoided Strong drink and cold animal food must be forbidden, and all mental agitation prevented The diet should be light and simple the sick room well ventilated and kept at a temperature of about 60° Fahr ice and cold water freely allowed, and cold and astrigent applied locally When the patient is strong, or of full habit purgatives should be given, particularly if the bowels are indolent, but where the patient is weak and the strength impaired light nourishing diet and even stimulants will be required One of the most disputed points respecting the treatment of inflammation is that of blood letting There can be no doubt that formerly this was carried to an unwarrantable extent, but now there are many who maintain that the abstraction of blood exerts no beneficial effect upon the inflammatory state at all, and that its influence on the system is injurious Dr Hughes Bennett of Edinburgh was the first to advocate this doctrine, and

Influenza.

his views may be said to be adopted by the great majority of the young practitioners of the present day On the other hand, there are others, among whom we may instance Sir Thomas Watson and Dr Aitken, who maintain that in many cases bleeding exerts a very beneficial influence and modifies the inflammatory action The former hold that nothing can be done to cut short the progress of the disease and that the treatment should be simply confined to guiding it to a favourable termination and this to be done by supporting the vital power rather than by lowering them We believe that the mode of treatment to be followed depends very much upon the particular case In most cases there can be no doubt the course recommended by Dr Bennett is the correct one, but we do believe that in some cases, as where the patient is of full habit the abstraction of blood in the first stage of the inflammation will be of service When a matter is being formed, soothing topical applications as warm fomentations, opiates, &c will be found of use and will also serve to allay nervous irritation, and afterwards purgative diaphoretic and diuretic will generally assist the excretion of effete matter in the blood (For inflammation in different parts see *PURULENT PERTUSSIS*, &c)

INFLUENZA [Ital influenza] because it was believed to be produced by the influence of the stars] is an epidemic fever to catch distemper, from a common distemper in the greater severity of its symptoms It comes on suddenly attacking many persons at once, but though the symptoms are uniform it is seldom fatal, except to the aged or those of weakly constitution *Symptoms*—The person is first seized with slight chills; there is great heaviness and pain over the eyes great prostration of strength, loss of appetite, quick irregular pulse, cough and difficulty of breathing with running at the nose and eyes The duration of the disease varies from two or three days to as many weeks, and frequently the debility continues much longer, occasioning, not uncommonly, relapses Differences of opinion exist as to the immediate cause of this disease, some attributing it to a noxious principle existing in the atmosphere others to sudden changes of the weather &c, but nothing is definitely known on the subject *Treatment*—In its treatment little is required to be done beyond keeping the patient in bed in a warm and equable temperature, and the administration of aperient and cooling medicines When the difficulty of breathing is considerable a mustard poultice may be applied to the chest When the fever has subsided tonics and stimulants should be employed, and should the cough remain obstinate, change of air will generally be found to be the most effectual means of removing it

Infusion.

INFUSION., *in-fü'-shun* [Lat. *infusio*, a pouring in or upon, a steeping], a solution of some of the principles of vegetables, generally in water, but sometimes in other vehicles. Either hot or cold water may be employed, according to the particular infusion required. The digestion, however, must be longer when cold water is used. The vegetable substances may be either fresh or dried; when fresh, they must be cut in pieces, and when dry, bruised or coarsely powdered. Water is then poured on the substance employed, and allowed to stand in a covered vessel for a space of time varying with the nature of the vegetable matter. It is afterwards strained, and is then fit for use. Infusions are liable to spoil soon, especially when made with warm water, or if the substance be of a fermentative nature. To assist in keeping the infusion, or to increase its powers, alcohol is sometimes added after straining. Wholesale chemists are now accustomed to prepare concentrated infusions for the use of general practitioners. These can be diluted to the ordinary strength at the time of using them, and not only possess the advantage of keeping better, but save much trouble and loss of time.

INHALATION [Lat. *inhalo*, I breathe inwards] is the drawing in of vapours or gases along with the breath, in order that they may exert a particular action on the mucous membrane of the air passages. The steam of hot water, tar vapour, the vapour of chlorine, hemlock, hydrocyanic acid, creosote, iodine, &c., are used in this way, by means of a simple contrivance called an inhaler.

INJECTION, *in-jek'-shun* [Lat. *injicio*, I cast in], is a medicated liquor thrown into some cavity of the body by means of a syringe or other apparatus. Those injections which are thrown into the rectum are called enemas, or clysters. (See CLYSTER.)

INNOMINATUM, Os, *in-nom-in-a'-tum* [Lat. *is*, without; *nomen*, a name], is the name given to the large irregular bone situated at the side of the pelvis. It is composed of three bones, which are distinct in the young subject, and are—the *os ilium*, or haunch-bone; the *os ischium*, or hip-bone; and the *os pubis*, or share-bone.

INOCULATION, *in-ök-u-lä'-shun* [Lat. *inocula-* *tio*], is the insertion of a poison into the body of a person, and is more particularly applied to the practice of producing smallpox by taking a small quantity of the fluid from the scab on the skin of one person, and inserting it under that of another. In this way a much milder form of the disease is produced than if it had been taken in the natural way. Hence the mortality from the disease has been much lessened; for, whereas of those that take the disease in the natural way, one in every five or six dies; of those that are inoculated, there is not more

Insanity.

than one in five or six hundred carried off. Inoculation is generally said to have been introduced into this country about 1721 by Lady Mary Wortley Montague, who had seen it practised in Turkey, where it had been long known. Inoculation, however, was not without its evils, as it exposed the person who might not have taken it naturally to some risk, and, by introducing the disease into a district previously free from it, might be the means of communicating it to others. Since the introduction of vaccination, inoculation has fallen into disuse. (See VACCINATION.)

INORGANIC CHEMISTRY. (See CHEMISTRY.)

INSANITY, *in-sän'-e-tis* [Lat. *in*, not; *sane*, sane, sound], is one of the most terrible disorders to which the human race is subject. *Causes.*—The causes which may lead to insanity, particularly in those whose mental constitution is weak, are very numerous. In many cases, the tendency to insanity is hereditary, and transmitted from parents to children. One of the most fertile causes of insanity in this country is drunkenness. Excessive study, strong mental excitement, grief, jealousy, disappointment, frequently also lead to it. Religious excitement is also not an unfrequent cause. *Characteristics.*—Sometimes insanity comes on quite suddenly, without any warning whatever; at other times there is a previous derangement of the animal functions, loss of appetite, restlessness, and want of sleep. It is usual to distinguish insanity into different kinds: as, —1. *Moral insanity*, in which there is an morbid perversion of the feelings, affections, and active powers, without any illusion or erroneous conviction impressed upon the understanding. 2. *Intellectual insanity*, affecting the reasoning powers, and which may be either general or partial,—the latter as in monomania. 3. *Mania*, or raving madness, in which the mental faculties are notoriously impaired, the patient gives way to all sorts of extravagances, and, if not prevented, will do mischief to himself or others. 4. *Dementia*, imbecility, fatuity, when the mental powers become gradually impaired, the sensibility diminished, and the person at length becomes careless, or dead, to all that is going on around him. Usually, however, two or more of these kinds occur together. Moral insanity frequently manifests itself in a desire to steal, or appropriate the property of others. In monomania, the patient reasons correctly upon all matters except one, which forms the subject of his insanity. Imbecility usually commences with loss of memory and the power of concentrating the attention, for any time, upon one subject; then all control is lost over the thoughts, and the mind wanders meaninglessly from one subject to another; at length there is a carelessness to all that is going on around, and life may become a mere existence, the mental

Inpiration.

faculties being entirely lost. Idioty differs from imbecility in being congenital, while the latter is acquired, or produced by disease. Idioty may be produced by various causes connected with the parents; as inter-marriages of near relatives, intemperance, scrofulous habits, some powerful influence acting on the mother during pregnancy. Idiots present every degree of mental imbecility, down to the lowest shade, without sense sufficient to satisfy the mere wants of nature. The head of the idiot is usually very small, particularly in the regions of the forehead; in some cases, however, it may be quite natural, and in others large and misshapen. The beneficial effects of attention to the physical health, and of education, are manifested even in the case of idiots. (*See CERTAINISM.*) *Treatment.*—The chances of recovery depend greatly on the complication, or otherwise, of insanity with other diseases, particularly epilepsy or paralysis, with either of which it is nearly hopeless. It is also influenced by the form of the disease, the period of its duration, the age, sex, and constitution of the patient. The mean duration of cases terminating favourably is from five to ten months; after the latter period, recovery is very doubtful. In advanced life, insanity is generally permanent, and imbecility is very rarely curable. While insanity may arise from some affection of the brain which speedily terminates in death, yet, in general, it is not necessarily a fatal disorder, for lunatics have been known to live thirty, forty, or fifty years after being seized with their disease. It is one of the signs of the advance of the present age that the treatment of the insane is no longer what it was; they are no longer loaded with chains and confined to some dungeon, but are treated with kindness and consideration, and allowed all the liberty that the nature of their malady admits of. In the cure of insanity, in which great progress has recently been made, the means adopted naturally resolve themselves into medical and moral. When the malady proceeds from, or is accompanied by, physical derangement, as it usually is, it is necessary to ascertain the nature of this, and to take means for its removal. If there be excitement and inflammatory action, mild antiphlogistic measures will be necessary, together with aperients and a low diet. If, on the contrary, there is debility and prostration of strength, a nourishing diet will be required. When, as is often the case, want of sleep is an attendant symptom, opiates are to be given. In all cases, exercise, fresh air, and cleanliness are required. The moral treatment of the insane consists in diverting their thoughts by occupations and amusements, and in gaining their confidence by kind and conciliatory measures.

INSPIRATION. (*See RESPIRATION.*)

Intoxication.

INTERCOSTAL, *in-ter-kos'-tal* [Lat. *inter*, between, and *costa*, a rib], is a term applied to certain muscles, vessels, &c., situated between the ribs. There are two sets of intercostal muscles,—the external and internal, which decussate each other like the strokes of the letter X.

INTERMITTENT, *in-ter-mit'-tent* [Lat. *inter*, between, and *mitti*, I send], is a term applied to diseases which are not continuous, but intermit for a time, and then return again, as in intermittent fevers. (*See FEVER and AGUE.*)

INTESTINAL WORMS. (*See WORMS.*)

INTESTINES, *in-test'-ines* [from Lat. *intus*, within], in Anat., is that part of the alimentary canal which extends from the stomach to the anus, and is situated in the cavity of the abdomen. It is composed of three coats, or membranes,—the peritoneal, the muscular, and the villous. It is divided into the small and large intestines. The small intestines have three divisions—the *duodenum*, so called from its length being about twelve finger-breadths, and which commences at the pyloric end of the stomach; the *jejunum*, so named from being generally found empty; and the *ileum*, terminating by a transverse opening into the large intestines, called the ileo-caecal valve. The large intestines have likewise three divisions,—the *caecum*, colon, and rectum. The *caecum*, or blind-gut, so called because it forms a cul-de-sac, or short rounded pouch, is about $2\frac{1}{2}$ inches in length, and has attached to it a narrow round and tapering part called *appendix* rect. It is situated in the right iliac region. The *colon* first ascends towards the liver, then passes across the abdomen under the stomach, to the left side, where it is contorted like the letter S, and descends to the pelvis. Hence it is divided into three parts, called the ascending portion, the transverse arch, and the sigmoid flexures. The *rectum* is a continuation of the colon in the pelvis, proceeding in a straight line to the anus. The entire length of the intestinal canal is about six times that of the body. The small intestines have internal membranous folds, called *villiæ conniventes*; while the large intestines have three strong muscular bands, which run parallel upon the surface.

INTOXICATION, *in-tox-e-kay'-shun* [Lat. *in*, and *toxiæm*, a poison], the state produced by the excessive use of alcoholic liquors or inebriating substances. In general, intoxication comes on gradually, and several stages may be noted in its progress. Thus, it shows itself at first by a general liveliness and excitability; during this stage, the circulation of the blood becomes more rapid, and all the functions of the body are performed with more freedom. While in this condition, the mental powers seem to act more freely; the imagination is stimulated, the fancy more lively, and the feeling of

Inula.

strength and courage increased. The effect on the brain is much more decided in the second stage of intoxication. Then, all the peculiarities of character, the weaknesses and failings of temperament which the individual can keep under and conceal in his sober moments, manifest themselves. Consciousness begins to be attacked, secret thoughts are revealed, and the sense of property lost. The peculiarities of this stage are summed up in the old proverb, *"in vino veritas, " in wine there is truth."* In the next stage, consciousness is still more weakened, the balance of the body cannot be kept, the sight becomes confused, and the brain dizzy. After this point, the mind seems to be entirely overwhelmed by the tumult of animal excitement; consciousness is utterly extinguished, the tongue can only mutter incoherent gibberish, the face becomes suffused with blood, the eyes protrude, and perspiration streams from the pores of the skin. Lastly, when completely prostrated, the victim of intoxication sinks into a heavy slumber, closely resembling the stupor of an apoplectic fit. It is difficult to distinguish intoxication in its more profound state from apoplexy, asphyxia, or the extreme effects of cold. In general the colour of the breath is one of the best means of diagnosis. (See APOPLAXY.) In profound intoxication, recourse should at once be had to the stomach pump in order to remove any of the alcoholic fluid not already absorbed. Strong tea or coffee should then be administered, and the heat of the body promoted if it has fallen. Sometimes cold effusion over the head and chest will be of service.

INULA, *in-u-la* [its Latin name], a gen. of the nat. ord. *Compositae*. The root of *I. Helianthemum*, or elecampane, one of the largest of British herbaceous plants, yields a starch called *inulin*, and has been used medicinally from the time of Hippocrates. It is an aromatic, tonic, expectorant, and diaphoretic, and has been prescribed in chronic catarrh and in dyspepsia.

IODINE, *iodinum*, or *Iodium*, *i-d-e-dine* [Gr. *iodos*, violet-coloured], in Chem., symbol I, univalent 17, sp. grav. of vapour 7.186. Iodine was discovered by Courtois, in 1811, in the waste liquors produced in the manufacture of soda from sea-weed. It is contained in nature, principally in sea-plants

and sea-water, in the forms of iodide of sodium, potassium, and magnesium. It also occurs combined with silver in *iodite*, a mineral found sparingly in Peru. The greatest source of iodine is burnt sea-weed, commonly known as kelp. It is largely manufactured at Glasgow from kelp made on the Scotch and Irish coasts. Iodine generally occurs in commerce in the form of blackish-black scales having a metallic lustre somewhat resembling plumbago. By carefully conducted sublimation, it may be ob-

Irish Moss.

tained in rhombic plates an inch long. At ordinary temperatures, it is volatile, emitting an odour closely resembling chlorine, but somewhat weaker. Its specific gravity is 4.947. It fuses at 225° and boils at 347°, giving forth a magnificent violet vapour, from which it derives its name. Iodine attacks the metals freely, iron or zinc being dissolved if placed with it in water. The compounds of iodine with the metals are decomposed by chlorine. Iodine taken internally in large doses is a violent poison, but in small quantities it is much employed as an antiscrofulic and antisyphilitic, to remove glandular swellings, swellings of the joints, &c. A strong solution of it may be frequently painted over those swellings with advantage. It is also of great use in the treatment of goitre. (See GOITRE.) The solution is made by dissolving 20 grains of iodine and 30 grains of iodide of potassium in 1 fluid ounce of distilled water. It is used externally or internally. Dose, internally, 5 to 10 minims. The tincture is made by dissolving ½ ounce of iodine and ¼ ounce of iodide of potassium in 1 pint of rectified spirit. Dose, 5 to 10 minims. The ointment is made by mixing together 22 grains each of iodine and iodide of potassium, with 1 fluid drachm of proof spirit and 2 ounces of prepared lard. For liniment dissolve 1½ ounce of iodine, ½ ounce of iodide of potassium, and ¾ ounce of camphor in 10 fluid ounces of rectified spirit. The principal of the other preparations containing iodine are—
Iodide of iron (iodine 3 ounces, fine iron wire 3½ ounces, and distilled water 15 ounces), dose 1 to 5 grains; *Iodide of potassium* (iodine 22 ounces, or 9 s., solution of potash 1 gallon, and wood charcoal 3 ounces), dose 2 to 10 grains; *Red iodide of mercury* (iodide of potassium 5 ounces, perchloride of mercury 4 ounces, and boiling distilled water 4 pints), dose ½ to ¼ grain; *Green iodide of mercury* (iodine 2½ grains, mercury by weight 1 ounce, rectified spirit, a sufficient quantity), dose 1 to 3 grains; *Iodide of sulphur* (iodine 4 ounces, and sublimed sulphur 1 ounce).

IPHECACUANHA, *ip-e-kak-u-an-ha*, a name adopted from the language of the South Americans, has been applied to a variety of emetic roots, but is restricted in the Pharmacopœia to the roots of a species of *Cephaelis* (which see).

IRIS, *i-ri-s*, the Flower-de-luce, the typical of the nat. ord. *Iridaceæ*. The species are very numerous, and are generally remarkable for their large yellow, white, or blue flowers, and sword-like leaves. The rhizomes of several species are more or less purgative and emetic. Those of *I. florentina*, *pallida*, and *germanica*, are used for imparting an agreeable odour to the breath, and yield the *orris root* of the shops.

Iris. (See ERICÆ.)

IRISH MOSS. (See CHONDRUS.)

Iritis.

Iritis, *i-rit'-is*, is an inflammation of the membrane of the eye. It usually commences with pain in the eye and intolerance of light; afterwards the colour of the iris changes, owing to the secretion of coagulable lymph, which spreads over it in a fine flake. Iritis, if it go on, is likely to end in adhesion of the iris to the neighbouring parts, in which case there is a loss of the power of contracting and dilating, or it may even be completely closed. Sometimes an abscess forms and bursts, discharging its contents into the anterior chamber of the eye, and causing an entire loss of vision. In the treatment of this disease, leeches and cupping, and cold applications to the eye, are to be employed: mercury is also usually administered in doses of say from 2 to 3 grains of hyd. cumcreta twice or thrice in 24 hours. (See EYE, DISEASES OF THE, OPHTHALMIA.)

IRON, *i'-ron* [Sax. *ir-en*], in Chem., symbol Fe (ferrum), equivalent 28, spec. grav. 7.844. This important metal is most extensively diffused over nature, occurring not only in the inorganic kingdom, but entering into the composition of vegetable and animal structures. It is found in nearly every part of the earth, in the form of ore. In its pure state, iron presents a dusky-grey colour and a rather feeble lustre, which is greatly improved by polishing. It is not affected by dry air or oxygen; but if moisture be present, it gradually passes into the state of hydrated sesquioxide, or rust, as it is termed in common parlance. Iron combines with most of the metals to form alloys. It decomposes the diluted hydrogen acids with great facility, eliminating hydrogen. Nitric acid attacks it with evolution of dioxide of nitrogen. Dilute sulphuric acid also dissolves iron with evolution of hydrogen. Iron, in the metallic state, is of great use to the chemist for precipitating certain metals, such as copper, from their solutions in the metallic form. Medicinally considered, the various preparations of iron belong to the class of tonics called hematinics, or those which improve the condition of the blood by increasing the number of its red corpuscles. Hence they are used in cases of debility, attended with anaemia or paleness, indicating an impoverished condition of the blood. The principal pharmacopoeical preparations of iron are the following:—*Saccharated carbonate* (sulphate of iron 2 ounces, carbonate of ammonia $\frac{1}{2}$ ounce, refined sugar 1 ounce, and boiling distilled water 2 gallons), dose 5 to 20 grains; *Oxrate of iron and ammonia* (solution of persulphate of iron 8 fluid ounces, solution of ammonia 10% fluid ounces, citric acid 4 ounces, distilled water quan. suff.), dose 5 to 20 grains; *Oxrate of iron and quinia* (solution of persulphate of iron 4½ fluid ounces, sulphate of quinia 1 ounce, diluted sulphuric acid 1½ fluid drachms, citric acid 3 ounces, solution of ammonia and distilled

Iron.

water, each quan. suff.), dose 5 to 20 grains; *Iodide of iron* (fine iron wire $\frac{1}{2}$ ounces, iodine 3 ounces, distilled water 15 fluid ounces), dose 1 to 5 grains; *Magnetic oxide of iron* (solution of persulphate of iron 5½ fluid ounces, sulphate of iron 2 ounces, solution of soda 4 pints, distilled water, quan. suff.), dose 5 to 20 grains; *Moist peroxide of iron* (solution of peroxide of iron 4 fluid ounces, solution of soda 3½ fluid ounces, distilled water quan. suff.), dose $\frac{1}{4}$ to $\frac{1}{2}$ ounce; *Hydrated peroxide of iron* (moist peroxide of iron, dried at a temperature not exceeding 21° until it ceases to lose weight, and then reduced to fine powder), dose 5 to 30 grains; *Phosphate of iron* (sulphate of iron 3 ounces, phosphate of soda 2½ ounces, acetate of soda 1 ounce, boiling distilled water 4 pints), dose 5 to 10 grains; *Sulphate of iron* (iron wire 4 ounces, sulphuric acid 4 fluid ounces, distilled water 1½ pt.), dose 1 to 5 grains; *Reduced iron or powder of iron* (hydrated peroxide of iron 1 ounce, zinc granulated, sulphuric acid, and chloride of calcium, of each quan. suff.), dose 1 to 5 grains; *Tartrated iron* (solution of persulphate of iron 5½ fluid ounces, solution of ammonia 10 fluid ounces, acid tartrate of potash, in powder, 2 ounces, and distilled water quan. suff.), dose 5 to 10 grains; *Strong solution of perchloride of iron* (iron wire 2 ounces, hydrochloric acid 12 fluid ounces, nitric acid 1½ fluid drachms, distilled water 8 fluid ounces):—1 part of this diluted with 3 parts of distilled water forms the common solution of perchloride of iron, and is given in doses of 10 to 30 minims; *Solution of pernitrate of iron* (fine iron wire, free from rust, 1 ounce, nitric acid 4½ fluid ounces, distilled water quan. suff.), dose 10 to 40 minims; *Solution of persulphate of iron* (sulphate of iron 8 ounces, sulphuric acid and nitric acid each 6 fluid drachms, distilled water 12 fluid ounces); *Compound mixture of iron* (sulphate of iron 25 grains, carbonate of potash 30 grains, myrrh and refined sugar each 60 grains, spirits of nutmeg 4 fluid drachms, rose water 9½ fluid ounces), dose 1 to 2 fluid ounces; *Aromatic mixture of iron* (pale cinchona bark in powder 1 ounce, columba root in coarse powder $\frac{1}{2}$ ounce, cloves bruised $\frac{1}{4}$ ounce, fine iron wire $\frac{1}{2}$ ounce, compound tincture of cardamoms 3 fluid ounces, tincture of orange peel $\frac{1}{2}$ fluid ounce, peppermint water quan. suff.), dose 1 to 2 fluid ounces; *Carbonate of iron pills* (saccharated carbonate of iron 2 ounce, confection of roses $\frac{1}{2}$ ounce), dose 5 to 20 grains; *Iodide of iron pills* (fine iron wire 40 grains, iodine 82 grains, refined sugar in powder 70 grains, liquorice root in powder 140 grains, distilled water 50 minims), dose 3 to 8 grains; *Syrup of iodide of iron* (fine iron wire 1 ounce, iodine 2 ounces, refined sugar 88 ounces, distilled water 13 fluid ounces.)

Irritability.

dose $\frac{1}{2}$ to 1 fluid drachm; *Syrup of phosphate of iron* (granulated sulphate of iron 22 grains, phosphate of soda 200 grains, acetate of soda 74 grains, diluted phosphoric acid 5 $\frac{1}{2}$ fluid ounces, refined sugar 8 ounces, distilled water 8 fluid ounces), dose 1 fluid drachm; *Tincture of acetate of iron* (solution of persulphate of iron 2 $\frac{1}{2}$ fluid ounces, acetate of potash 2 ounces, rectified spirit quan. suff.), dose 5 to 30 minims; *Tincture of perchloride of iron* (strong solution of perchloride of iron 5 fluid ounces, rectified spirit 15 fluid ounces), dose 10 to 30 minims; *Reduced iron lozenges* (reduced iron 720 grains, refined sugar in powder 25 ounces, gum acacia in powder 1 ounce, mucilage of gum acacia 2 fluid ounces, distilled water 1 fluid ounce), dose 1 to 6 lozenges, of one grain of iron each; *Wine of iron* (fine iron wire 1 ounce, sherry 1 pint), dose 1 to 4 fluid drachms; *Wine of citrate of iron* (citrate of iron and ammonia 160 grains, orange wine 1 pint), dose 1 to 4 fluid drachms.

IRRITABILITY is a power or property of organized beings of being acted upon by stimuli so as to give rise to movements. It is manifested chiefly by muscular or fibrous tissues. Muscular irritability is so far independent of the nervous system that it may be excited in a part after the nerves proceeding to that part have been cut, or even after the part is altogether separated from the body.

ISCHIUM, iš'-i-ūm [Gr. *ischio*, the loin], is the name of one of the three bones of the pelvis that go to form the os *innominatum*. (See INNOMINATE BONE.)

ISCHOURA, iš'-ur'-ū [Gr. *ischo*, I retain; *ouron*, the urine], denotes a retention of urine, and is distinguished from dysuria in that, in the latter case, the discharge is attended with much difficulty, whereas in the former there is a total retention. This last may arise either from mechanical obstruction or paralysis of the bladder, or it may arise from the kidneys having lost the power of secreting the urine. The latter (*ischuria renalis*) is more properly termed suppression of urine, and is known by the bladder being found to be empty on introduction of the catheter. It is usually occasioned by long per-indulgence in strong drinks. The urea and other elements of the urine, instead of being discharged, are accumulated in the blood. The patient complains of uneasiness in the head and loins, becomes heavy and drowsy, sinks into a comatose state, and expires in the course of four or five days. Leucine can hold out little hope of relief in this disease.

ISINGLASS, i'-sing'-glas, a very pure form of gelatine or animal jelly, prepared from certain parts of the entrails of several fish. The best isinglass is prepared in Russia, from the membranes of the sturgeon, especially from its air-bladder and sounds, which are very large. Isinglass of the purest kind is used in confectionery, and also largely in

Itch.

refining wine and beer. It is almost without colour, taste, or smell; is usually in thin pieces; and is soluble in water. It is dissolved readily by most acids, but is not soluble in alcohol.

ISOMORPHISM, i-so-mor'-fism [Gr. *isos*, equal; *morphe*, form], the property possessed by certain bodies of similar composition, of crystallizing in similar forms. Substances possessing this property are found to be strangely allied in their chemical nature; and the fact of two bodies crystallizing in the same form has often led to the discovery of points of great similarity between them.

ISSUUR, iš'-sue [Fr. *issuer*, to go out; Lat. *fonsculus*, a little fountain], in Surg., is an ulcer artificially formed, and kept open, so as to discharge matter, for the purpose of removing an unhealthy condition from some neighbouring part of the system. It is usually formed by making an incision through the integuments with a lancet, or other sharp instrument, sufficiently large for the insertion of one or more pens, which are retained there by a strip of adhesive plaster, so as to prevent the wound from healing, and keep up a state of constant irritation. The actual cautery and caustic potash are also employed in forming issues, being applied to the part till it sloughs, and the ulcer thus formed being kept open, either with pens or some irritating substance. Setons are another form of issue, made by passing a broad flat needle, threaded with silk or other suitable substance, under a portion of the skin, and leaving the silk in the passage, with an end hanging out on each side. Issues are principally employed for the removal of chronic disorders of internal organs, particularly such as are of an inflammatory nature, the object being to withdraw the action from the internal organ, where it might be attended with danger, to without where it is unimportant. In the management of all issues great cleanliness should be observed, and the part dressed several times a day. A fresh portion of silk should be pulled through the wound every day, so as to keep up a constant irritation and discharge.

ITCH, išch [Ang.-Sax.; Lat. *scrabere*, from *scabia*, I scratch], a disease of the skin, characterized by an eruption of pustules or small vesicles, the two being frequently intermixed, and accompanied by an intolerable itching; whence it derives its name. It has been divided into different classes; but the distinction is of no practical importance. It occurs chiefly about the fingers and wrists, and the flexures of the joints; but it may also attack other parts of the body, the face being the only part on which it never appears. It is caused by a minute insect—the *Acarus* or *Sarcopeltis scabiei*—lodging under the skin, and is readily communicated by contact. The only proof of the existence of itch is the presence of the

Ivy.

insect, and this is readily detected by means of the microscope. *Treatment.*—Sulphur is usually regarded as the great specific for this disease. It is commonly used in the form of an ointment, smeared over the parts once or twice a day, washing them carefully with soft soap and hot water for some time before each application. This is so necessary to cure, that some hold that it is principally owing to the action of the soft soap. The following ointment is also recommended: 2 parts of sublimed sulphur, 1 part of sub-carbonate of potash, and 8 parts of lard. This usually takes from 6 to 8 days to effect a cure. The following ointment, however, is said to effect a cure in 4 days, viz., recent grains of sulphur, in powder, 3 parts by weight, and boiling lard, 8 parts, digested for 24 hours at a temperature of 100° in a sand-bath and strained. After a cure is effected, care must be taken to destroy the insects and eggs that may be among the cloths of the patient. If these are not destroyed, they should be exposed to a temperature of not less than 180°, by being put into an oven, or into hot water, or by ironing them with a hot iron; or they should be well fumigated with sulphurous acid gas, which may be formed by igniting a rag dipped in melted sulphur.

Ivy. (See HEDERA.)

J.

JALAP. (See ELOGORIUM)

JAMES'S POWDER, or ANTIMONIAL POWDER. (See ANTIMONY.)

JAUNDICE, *jawn'-dis* [Fr. *jaunisse*, from *jaune*, yellow], in Med., is the name of a disease characterized by yellowness of the skin and eyes, the urine being saffron-coloured, and the faeces usually whitish or drab-coloured. It is commonly preceded by symptoms of a disordered state of the liver and digestive organs, as loss of appetite, irregular bowels or constipation, colic pains, nausea, headache, languor, &c. Sooner or later, the yellow colour begins to appear, usually first in the eye, then the face, and then the whole body. Sometimes the yellowness is the first symptom. From the time of the appearance of the yellow hue, many of the preliminary symptoms may diminish. The shades of yellowness are various, from a light yellow to a deep orange hue, and in some cases greenish, or even almost black, when it is known as green or black jaundice. Jaundice arises from the excretion of bile being prevented and retained in the blood, or re-absorbed and diffused throughout the system. It depends upon various and different internal causes. Any kind of pressure upon the excretory ducts will occasion it, as by tumours, &c.; by the ducts being plugged

Juniperus.

up by mucus, inspissated bile, or bilary calculus. Fits of anger, fear, alarm, &c., have sometimes been directly followed by jaundice. It may also occur as a symptom of acute or chronic inflammation of the liver. A high atmospheric temperature long continued has also a decided influence in producing certain forms of this disease. In general, we may expect a favourable termination of the disease, except when it depends upon structural disease of the liver, or supervenes suddenly upon some great mental or bodily shock. The greenish or darkish varieties are the most dangerous. The course and duration of this disease are various, in some cases disappearing or proving fatal as early as the fourth day; in others continuing for months or years. Some kinds of jaundice are absolutely irreducible, others will pass away without any treatment. *Treatment.*—The treatment of this disease will in some measure differ according as it arises from some mechanical obstruction preventing the bile from entering the duodenum, or from defective action on the part of the secreting substance of the liver. In the former case, attention must be directed to remove the impediment, and if possible to check the action of the liver till this is effected. In the latter, the action of the liver is to be stimulated by means of mercury and other active purgatives. Calculi are most commonly the obstructing body. (See CALCULUS.) If there be any spasmodic pain in the right side, opium and the warm bath should be used; a mild diet, and the avoidance of all stimulants, should be strictly enjoined.

JESUNUM, *je'-nū-nūm* [Lat. *je-nūnus*, hungry], the second portion of the small intestines, so called from its being generally found empty in the dead body. (See INTESTINES.)

JEWIT'S BARK. (See CINCHONA.)

JOINTS. (See ANATOMY)

JUGLANS, *ju'-glāns* [Lat. *Jovis glans*, the nut of Jupiter, so called on account of its excellence], in Bot., the Walnut, the typical gen. of the nat. ord. Juglandaceae. *J. regia*, the common walnut-tree, is a native of the countries between Greece and Cashmere, but has long been naturalised in the western parts of Europe. The seed of this tree is the well-known edible walnut, which yields, by expression, a useful fixed oil of a drying nature, like linseed oil. The bark possesses carthartic properties.

JUGULAR VEINS, *jug'-gu-lar* [Lat. *jugulum*, the neck], are the veins which run down the sides of the neck, and carry the blood downwards from the head. They are divided into external and internal, the two afterwards uniting and going with the subclavian vein to form the superior vena cava, which terminates in the superior part of the right auricle of the heart.

JUNIPERUS, *jū-nip'-erēs* [Lat.], the Juniper, a gen. of plants belonging to the ike-

Kermes Mineral.

ord. *Coniferae*. The species *J. communis*, the common juniper, is a bushy shrub with evergreen sharp-pointed leaves. It grows in all the northern parts of Europe. All parts of the plant, when bruised, exhibit a more or less agreeable terpininiate odour. The fruits and young tops are used in medicine, having stimulant and diuretic properties. The volatile oil (oleum juniperi), obtained from the fruits and other parts by distillation with water, is official in the British Pharmacopœia. It is used in the preparation of the spirit of juniper (1 fluid ounce of the oil to 49 fluid ounces of rectified spirit), and given in doses of $\frac{1}{2}$ to 1 fluid drachm. The fruits or berries of the juniper are also used to flavour gin and Hollands. *J. sabina*, the common savin, is another interesting species. The young branches are official in the Pharmacopœia. They, and the oil obtained from them, have acrid, stimulant, diuretic, emmenagogue properties. In large doses they are irritant poisons. Dose, in powder, 4 to 10 grains; of oil, 1 to 5 minims; of tincture ($\frac{1}{2}$ ounces to 1 pint proof spirit), 20 to 60 minims. Savin ointment is a useful acrid application to keep open blistered surfaces.

K.

KERMES MINERAL. (See ANTIMONY.)

KIDNEY, *Kid-né* [Ang.-Sax.; Lat. *ren*], is the name of a double gland, having for its office the secretion of the urine. The form of the kidney resembles that of a French bean, its average length being from four to four and a half inches, its breadth two inches, and its thickness one inch. The two kidneys are situated in the lumbar region, one on each side of the spine, on a level with the last two dorsal and the first two lumbar vertebrae: they are of a brownish-red colour, flattened from before backwards, and grooved on the inferior border for the great vessels. They are covered by a thin, firm, transparent, cellular envelope, and internally are composed of two substances—an exterior or cortical, and an interior or medullary. The cortical substance is the seat of the greater part of the secretory process, and is made up of a great number of uriniferous tubes, much convoluted, and inclosing each other, and lined with epithelial cells of a spheroidal and projecting form. Scattered through the plexus formed by these tubes and the blood-vessels, are dark points, which have been called *corpora Malpighiana*, from their discoverer. These last are convoluted masses of minute blood-vessels included in flask-like dilatations of the uriniferous tubes, forming a close relation between the circulating and secreting systems. The medullary substance is composed principally of tubes passing nearly

Kidney, Diseases of the.

straight inward to the central receptacle of the secretion. Both substances are imbedded in interlacing fibres, most abundant in the medullary. The kidneys are well supplied with blood-vessels and nerves, in accordance with the importance of their function. The renal arteries come directly from the aorta, and the large veins terminate in the vena cava. The nerves come from the renal plexus. The renal arteries divide, soon after entering the organs, into minute twigs, which pierce the capsule of the Malpighian tufts. From the convolutions of those tufts arise the efferent vessels, which surround the uriniferous tubes, and from which the renal veins are formed; and thus the urinary secretion is produced from blood which has passed through the Malpighian capillaries. The uriniferous tubes end in a number of conical bundles pointing towards the interior, and are there embraced by membranous ducts proceeding to the central reservoir or pelvis of the kidney, from which arises the ureter, the membranous tube which conducts the renal secretion of the bladder.

KIDNEY, DISEASES OF THE.—The kidneys are subject to a variety of dangerous and painful diseases, arising from various causes. They may be arranged in two distinct classes—those which are the result of some cause acting locally, as calculi, retention of urine, or a blow on the loins; and those which are the result of a constitutional cause, acting upon the kidney by inducing an abnormal condition of the blood. (For disease of the kidney arising from renal calculi, see CALCULUS.) In retention of urine, the ureter, pelvis, and infundibula become much dilated, and the cortical substance expanded and lobular on the surface. The mucous membrane frequently becomes ulcerated, inflammatory deposits occur in the substance of the kidney, and the gland is destroyed by a slow atrophy, or more rapidly by suppurative inflammation. Both kidneys are usually affected, but in different degrees. (See ISCHOURIA.) Disease of the kidney from external violence is not of frequent occurrence. Among the diseases resulting from a constitutional cause is scrofulous disease of the kidney, which occurs in the form of small scattered deposits of tubercular matter, or it presents itself in the form of a thick curdy deposit, which leads to the formation of a large abscess. Cancer of the kidney is a disease less uncommon than it was formerly supposed to be. In the great majority of cases some of the neighbouring parts are complicated, in one or other of which the disease obviously originated. Hydatids are occasionally found in the kidney. They are generally numerous or multiplied, and contained in a mother-cyst, which frequently acquires a large size, forming a tumour which may be often felt externally. (See HYDATID.) Inflammation

King's Evil.

of the kidneys (nephritis) is characterized by pain in the lumbar regions, often extending anteriorly through the abdomen, or descending to the groin and testes, with retraction of the latter, disordered state of the urinary secretion and excretion, febrile disturbance, sometimes numbness of the thigh, and nausea, or vomiting. The whole of these symptoms are not always present, except in some of the more severe cases. Inflammation of the kidneys like other inflammatory disorders, results from cold wet, intemperance &c., and its treatment requires to be very active, local depletion by leeches, and cupping, being freely employed, followed by warm fomentations. (See Bright's Disease.)

KING & JYL (See Scborula)

KINO (See Pterocarpus)

KNEE, THE, *the* [Lat. *genou*, Ger. *Knöchel*], one of the most important joints of the body, is formed by the lower extremity of the femur or thigh bone, the upper extremity of the tibia or large bone of the leg, and the patella or knee cap which is situated in front of the joint and serves to protect it from injury as well as to afford leverage to the muscles of the thigh in moving the leg. It is a small flat triangular bone, anteriorly a little convex and rough, for the insertion of muscles and ligaments, posteriorly smooth, covered with cartilage, and divided, by a middle longitudinal ridge, into two slightly concave surfaces corresponding with the two convex eminences or condyles of the femur. The entire joint is bound together by a number of ligaments.

KOUSKOO (See *Histeria*)

KRAMERIA, *kra me'rea* [after Kramer, a German botanist] is the only gen. of the nat ord *Krameriaceae*. The genus contains 14 species, natives of the warm and temperate regions of Central and South America. Their roots are intensely astringent, those of *K. triandra* are officinal and are commonly known as rhubarb roots. In Medicine, rhubarb root is used as an astringent and tonic and is well adapted to all those diseases which require astringent remedies. The infusion (1*oz.* ounce of the root bruised to 1*fl. oz.* fluid ounces of boiling distilled water) is given in doses of 1*fl. oz.* fluid ounces, the tincture (2*fl. oz.* ounces of root in coarse powder to 1*pint* of proof spirit) in doses of $\frac{1}{2}$ to 1*fl. oz.*

KHEASOTT. (See *Cinchona*)

L.

LABORATORY, *la bô'ôrâ to're* [Lat. *laboratorium*, from *labora*, I toil], a place properly

Lactuca.

fitted up for the performance of chemical operations. The fitting up of a laboratory is a matter demanding great knowledge and judgment and must of course depend very much upon the nature and extent of the operations to be carried on.

LABYRINTH (See *Cistis*)

LABYRINTH (See Ear)

LAC (See Milk)

LAC SULPHURIC, *lac sul phûris* [Lat. *milk* of sulphur] — Sulphur precipitated from solutions of alkali and persulphide. In the addition of an acid, was formerly used in Medicine under this name. (See Sulphur.)

LACHRYMATE, *lac rî mal* [Lat. *lacryma*, a tear] is a term applied to various organs in the neighborhood of the eye, and connected with the tears, as the lachrymal glands by which they are secreted, and the lachrymal duct by which they are conveyed away. (See Eye.)

LACTA MUS *lac'k'ul'ah* [Lat. *lac* milk] is the name given to certain vessels of the human body on account of their containing a milk-like fluid, the chyle. They serve to convey the chyle, or nutritious part of the food from the intestine to the thoracic duct. They are very tender and transparent vessels, and are furnished with an infinite number of valves. They have their origin in the intestinal villi, at first of the small intestine, perforate the other coats, and then proceed through numerous converging branches between the layers of the mesentery to the thoracic duct, the main branch of the absorptive system which, at the part where the chief lactiferous branches join it, is dilated, which is called the *receptaculum chyle*. In the passage through the mesentery the lactiferous vessels receive the mesenteric absorbent glands. (See Digestion.)

LACTIC ACID *lac'tik'asid* [from Lat. *lac*, milk]. ($\text{HO}, (\text{H}_2\text{O}_2)$) Lactic acid is produced by natural or artificial fermentation from milk and other animal matter containing lactose or sugar of milk. In its pure state it is a transparent, odorless, unctuous, crystallizable, syrupy liquid, with a sharp acid taste. It is soluble in water, alcohol, and ether, and may be distilled unchanged if an air excluded. Lactic acid enters into the composition of the gastric juice, the perspiration and, in cases of diabetes, of the saliva and the urine. It is of considerable use in various kinds of dyspepsia, in doses of $\frac{1}{2}$ to 1*drachm*, with syrup before meals.

LACTIN, LACTOSE, sugar-of-milk. (See Sugar.)

LACTUCA, *lac'tu'ka* [Lat. *lac*, milk, from its milky juice], the Lettuce, a gen. of the nat ord *Composita*. The species *L. sativa* is the common or garden lettuce, so largely cultivated as a salad. If the stem of the common lettuce, when it is coming into flower, be wounded with a knife, a milky juice exudes, which dries in the open air into a friable mass of a brown colour. This

Lambdoidal Suture.

Impregnated juice is called *lactucarium*, or *lettuce-oïsme*, and is sometimes employed in medicine for its narcotic properties. *Lactucaria* yields the best and the largest quantity of lactucarium, and is that from which the officinal extract is prepared. It is used as a narcotic, and to allay pain, nervous irritation, and cough. Dose, from 5 to 20 grains.

LAMBDOIDAL SUTURE, *lām'-doy'-ə-dil'*, is the suture that unites the occipital to the two parietal bones of the skull, and is so named from its resemblance to the Greek letter *lambda*. (See ANATOMY.)

LANCET, *lān'-set* [Fr. *lancette*], a sharp-pointed two-edged surgical instrument, used in venesection, and in opening tumours, abscesses, &c.

LARD, *lārd* [Fr. *lard*, Lat. *lardum*], the fat of swine after being melted and separated from the flesh. In the pig, the fat differs from that of almost every other quadruped, as it covers the animal all over, and forms a thick layer between the flesh and the skin, not unlike the blubber in whales. Lard is used largely in medicine in the making of ointments. The prepared lard of the Pharmacopœia (*ad us preparatu*) is made from the internal fat of the abdomen of the pig, perfectly fresh and removing as much of the membranes as possible. The fat is cut into small pieces and put into a vessel with cold water, having also a current of water running through it. It is then broken up with the hands so as to expose every part of it to the water, in order that everything soluble may be carried away. The water is then drained away by means of a sieve or cloth, and the fat liquefied at a heat not exceeding 212°, and strained through flannel while hot; it is then put into a pan heated by steam and kept at a temperature a little above 212°, stirring it continually until it becomes clear and entirely free from water, and is then strained through flannel.

LARYNGITIS, or **CYNANCHA LARYNGEA**, *lār-in-jī-tis* [Lat.], is inflammation of the larynx, more particularly of the mucous membrane that covers the laryngeal cartilages, including the epiglottis. **Characteristics.**—This disease is characterized by a high degree of fever; the pulse is frequent and hard, and the patient manifests a considerable degree of restlessness and anxiety; he likewise complains of sore throat; and among the earliest symptoms that bespeak danger is difficulty of deglutition, for which no adequate cause is visible in the fauces; and to this is presently added difficulty of breathing. The act of inspiration is protracted with wheezing, and the patient points to the *rombus Adami* at the seat of the disease. He speaks either hoarsely, or, what is more common, all power of audible voice in the larynx is lost, and he speaks only by means of his lips and tongue in a whisper.

Lateral.

As the disorder advances, the patient's general distress increases. His countenance, from being flushed, becomes pale or livid; his looks anxious and ghastly; he struggles for breath, and if he does not obtain timely relief, dies of strangulation. Its course is generally rapid, terminating fatally within the fifth day, and even, in some cases, within twelve hours. **Treatment.**—In the treatment of this disease, active remedies require to be promptly had recourse to. In the earlier stages of the disease, if the fever is high, and if the patient is strong or of full habit, blood-letting may be of service; but otherwise it is more likely to be injurious. If it be desirable to abstract blood locally, it had better be done by cupping on the back of the neck; and if a blister is applied, it should be on the upper part of the sternum or chest, rather than on the front of the throat. Purgatives should also be administered, and warm fomentations applied to the throat. As the danger of this disease lies in its tendency to produce suffocation, wherever there is danger of this termination tracheotomy should be had recourse to, and an artificial opening made, through which the operation of breathing may be carried on, till the parts of the larynx acquire their natural state. Nor should this operation be too long delayed. (See TRACHEOTOMY.)

LARYNOSCOPE, *lār'-in-go-skōpē* [Gr. *larynx* and *skopeo*, I examine] is an instrument lately brought into use, by means of which the condition of the larynx may be ascertained. It consists of a small flat mirror, with a long stem, which, being previously warmed to prevent the breath from condensing upon it, is introduced into the mouth; while at the same time a stream of light is thrown upon the throat by means of a reflector.

LARYNX, *lār'-inx* [Lat.], is the name given to the organ of the voice, situated at the upper and fore part of the neck, where it forms a considerable projection. It extends from the base of the tongue to the trachea; is narrow and cylindrical below, but broad above, where it presents the form of a triangular box, being flattened behind and at the sides, whilst in front it is bounded by a prominent vertical ridge. It is composed of cartilages connected together by ligaments, moved by numerous muscles, is lined by mucous membrane, and supplied with vessels and nerves. The cartilages of the larynx are nine in number, three single and three in pairs, viz., the thyroid, cricoid, epiglottis, the two arytenoid, the two cornua of梨形, and the two cuneiform. The upper opening of the larynx is termed the glottis. The vocal ligaments are two narrow bands of dense fibrous and highly elastic tissue, stretched between the anterior angle of the thyroid and the anterior surface of the arytenoid cartilages.

LATERAL, *lāt'-ə-rāl* [Lat. *laterus*, the side],

Latissimus Dorsi.

of or belonging to the side. In Surgery the lateral operation is one of the modes adopted in performing the operation of lithotomy.

LATISSIMUS DORSI. *Lat-is'-ee-mus dor'si* [Lat. *latissimus*, broadest, and *dorsum*, the back] is the name of a broad flat muscle of the back which curves to move the humerus downward and backwards, and to turn it upon its axis.

LAUDANUM (*See OPIUM Tincture of*)

LAWING GAS, a name sometimes applied to protoxide of nitrogen from its effects upon the human subject (*See NITROGEN, Protoxide of*)

LAUREL, *la'ur-e'l*, the typical gen. of the nat ord *Lauraceæ*. The species *L. nobilis* is the sweet bay, or laurel, the classic shrub that furnished the heroes of antiquity with their laurel crowns. The fruit was formerly esteemed, under the names of bay or *laur berries*, and reputed to be aromatic stimulant and narcotic. Laurel leaves have somewhat similar properties, but they must not be confounded with the leaves of the poisonous cherry laurel (*See L. nitens*).

LAVENDER [*Lu'vend'er*] the flower of the lavender, a shrub of the nat ord. *Labiatae*, the well known flowering heads of which are well known in English oil of lavender which is largely employed in perfumery, & also in medicine as a stimulant stomachic, and carminative. It is colourless or pale yellow with the odour of lavender and a hot, bitter aromatic taste. The spirit of lavender is made by mixing 2 fluid ounces of the oil with 4 fluid ounces of the rectified spirit. Dose 1 to 1 fluid drachm. The compound tincture is made by macerating 250 grains each of cinnamon bark and nutmeg bruised and 50 grains of red sandal wood in 2 pints of rectified spirit for 7 days in a close vessel with occasional agitation, then strain and add 1/2 fluid drachm of oil of lavender and 10 minims of oil of romanée, filter and add spirit to make up 2 pints. Dose 1 to 1 fluid drachm. This is an ingredient in arsenical solution. The oil of lavender is also a component element of the compound liniment of camphor.

LAXATIVE [Lat. *from lasso*, I loosen], a term applied to such medicines as are greatly purgative (*See CATHARTIC*).

LEAD, *led* [*Sax. lead*], symbol Pb (Lat. *plumbum*), equiv. to 57 spec. grav. 11.44 is one of the most important of the metals both itself and its compounds being applied to many useful purposes. It occurs in nature in combination with a large number of substances, but its most valuable ore is galena or sulphide of lead, found in large quantities in various parts of the world. Lead is a bluish white metal so soft that it may be marked with the nail. It may be beaten into pretty thin sheets, as well as drawn into wire, but its malleability and tensility are both low. The uses of lead are

Lead.

very numerous, its compounds are well known, and its alloys are numerous and important. The salts of lead are mostly colourless. They are all highly poisonous, the best antidote being sulphate of soda, or magnesia, which forms a comparatively inert and insoluble sulphate. In the more usual forms of lead poisoning, when, for instance, the metal becomes introduced into water from the malicious use of lead pipes, these antitoxins are ineffectual. Under the combined action of air and pure water, lead is liable to corrosion, great care should therefore be exercised in using lead pipes in districts supplied with pure water. Water containing sulphates or carbonates may generally be brought into contact with lead without danger as a thin deposit of sulphate or carbonate is formed which preserves the metal from further action. *Acetates*—Acetic acid forms at least four compounds with lead, viz. the neutral acetato subsequently tri- and acetate. The most important of those are the neutral acetite and the tributyl acetate. The former is made by dissolving litharge in excess of acetic acid, and evaporating. With care it may be made to crystallise in fine right rhombic prisms, but its most usual form is a mass of confused crystals resembling lead sugar, from which circumstance joined to its sweetish metallic taste, it has received the name of sugar of lead. It dissolves readily in water and alcohol. If it is heated it effervesces and heated, it becomes anhydrous and turns into a clear liquid. The neutral acetate of sugar of lead taken internally is a powerful sedative and astringent and is employed in profuse discharges and hemorrhages. Dose, from 1 to 4 drams. A solution is used externally as a wash to inflamed surfaces and as a collyrium in ophthalmia. *Prussiate of lead*, which forms the basis of Gouard water is prepared by digesting 7 parts of finely powdered litharge with 6 parts of the neutral acetate dissolved in 10 parts of water. It has a strong alkaline reaction, and crystallizes in orange needles. The carbonate of lead or *lead* is commonly made by exposing the lead dust in thin gratings to the combined action of acetic acid vapour, monstane and carbonic acid gas. It is employed medicinally only externally, and usually in the form of an ointment for eruptions, ulcers, and eruptions, as astringents and deodorants. The chlorid and chromate of lead are only used in the arts. The iodide is formed by dissolving 4 ounces of nitrate of lead in a pint and a half of distilled water and a like quantity of the iodide of potassium in half a pint of distilled water, and mixing the solutions. The precipitate is to be collected in a filter, washed with distilled water, and dried at a gentle heat. It is sometimes given internally in doses of $\frac{1}{4}$ to 2 grains,

Lead Plaster.

but is usually employed externally in the form of ointment or plaster to scrofulous tumours and chronic enlargements of the joints. There are four *nitrates of lead*, three of which are basic, containing one equivalent of nitric acid united to 2, 4, and 6 equivalents of oxide of lead. The neutral nitrate, which is an important salt, is prepared by dissolving the metal, its oxide or carbonate, in nitric acid, and crystallizing. It is used in the preparation of the iodide of lead. The principal oxides are the *suboxide*, Pb_2O ; the *oxide*, PbO ; and the *binoxide*, PbO_2 . Several intermediate oxides also exist. Medicinally, the oxide of lead is employed in the making of various plasters; also in the making of acetate of lead. Lead plaster is made by boiling together gently for four or five hours, and constantly stirring, till of a proper consistence for a plaster, 4lb. of oxide of lead in fine powder, 1 gallon of olive oil, and $3\frac{1}{2}$ pints of water. Sulphate of lead occurs in nature as *lead vitriol*, which is found crystallized in transparent octahedra. It is obtained in the laboratory as a white precipitate, by adding dilute sulphuric acid to a solution of a soluble salt of lead.

LAD PLASTER. (See DIACYLON PLASTER.)

Leech. *Iecith* [Sax. *laecan*, Lat. *hirundo*, from *hiareo*, I draw], a genus of red-blooded worms, or annelid animals, which have an oblong body, with a sucker at one end and a mouth at the other. In the mouth there are three small jaws, tongues, or plaits of skin, by which they are enabled to extract the blood of other animals, which forms their principal nourishment. Leeches derive their chief interest from their use as a remedial agent. The species generally employed belong to the genus *Sanguisuga*. Of this genus two species are employed in Europe—*S. officinalis*, the Hungarian, or green leech, used in the south of Europe; and the *S. medicinalis*, the German, brown, speckled, or English leech, used in the north of Europe. The latter variety is now rare in this country, on account of the draining of so many marshes, bogs, and ponds, where it was formerly abundant. Leeches vary in the quantity of blood which they can abstract, from one to two drachms to half an ounce; from one to two drachms is the average. When forcibly pulled away whilst sucking, the leech is very apt to leave the teeth, or bits of skin in the wound, giving rise to pain and inflammation of the part; the leech is also rendered incapable of biting again. One of the most certain methods of making leeches bite is to cleanse the skin thoroughly; and the leeches should be exposed to the air for a short time previous to their application, as by this means they will bite more eagerly. They may be applied to the part by holding them lightly in the fingers, if they are voracious; or they

Lemon.

may be placed in a cup or glass which should be inverted over the part from which the blood is to be drawn. A leech should not be disturbed whilst sucking, but should be permitted to fall off. When it has dropped off, it should be seized by the tail, and stripped between the finger and the thumb, in order to make it disgorge most of the blood, allowing it to retain about one-third,—this is better than applying salt or vinegar to the mouth; it should then be placed in many successive fresh waters, when it may survive, and after many months be again fit for use.

LIVE. *leg* [Du. *leg*], is commonly applied to the whole of the lower limb from the hip to the ankle, but properly it is confined to that portion which extends from the knee to the ankle, the upper portion being the thigh. The leg proper is formed of two bones,—the tibia and fibula. The former of these is the larger, and articulates above with the os femur, or thigh-bone, presenting for that purpose two articulating surfaces, an external and internal, known as the condyles of the tibia, and separated from each other by a large bony prominence termed the spine, and two rough surfaces, one in front the other behind the spine. On the outer side of the tibia is a projection marked inferiorly by a smooth surface, for articulation with the upper extremity of the fibula. The body or shaft of the tibia is large and triangular above, but becomes smaller and more circular towards the inferior or tarsal extremity, where it expands and assumes a quadrilateral form. Internally it descends farther than in any other direction, forming a projection termed the internal malleolus: externally is a rough triangular surface which gives lodgment to the fibula and attachment to the ligaments which connect these bones together. It articulates below with the astragalus. The superior extremity, or head of the fibula, is round and irregular, and presents, on its inner side, a smooth cartilaginous surface for articulation with the tibia. The tarsal extremity is large and more prominent than the superior, and forms a large irregular projection of a triangular shape, termed the external malleolus. It articulates with the astragalus.

LIMON. *lem-on* [Fr. *limon*, Low Lat. *limonum*].—The fruit of the lemon tree (*Citrus limonum*) is extensively cultivated in the south of Europe, and especially in Sicily, where the fruit forms an important article of commerce. The lemon is a variety of the citron, and belongs to the family *Americaceae*. Lemon juice (*limonis mucro*) is obtained by subjecting the ripe fruit freed of its rind and seeds to pressure. It is a slightly turbid yellowish liquor possessing a sharp acid taste and grateful odour. Diluted with water, it forms a refreshing drink in febrile and inflammatory con-

Lemonade.

plants, and in hot climates. *Oil of Lemons* is the oil expressed or distilled from the fresh lemon peel, and is imported chiefly from Sicily. It has a pale yellow colour, agreeable odour, and warm and bitter taste. *Syrup of Lemons* is made by heating to the boiling point 1 pint of lemon juice strained, and then putting it into a covered vessel with 2 ounces of fresh lemon peel till cold, then filter and add 2½ lb. of refined sugar, and dissolve with a gentle heat. Dose, 1 fluid drachm. To form the *tincture*, macerate for seven days in a closed vessel 2½ oz. of fresh lemon peel sliced thin with 1 pint of proof spirit. Dose, ½ to 2 fluid drachms.

LEMONADE, *lē'mōn ad* [Fr. *limonade*] is a drink prepared of water, sugar, and the juice of lemons literally speaking, but cream or tartar forms the principal ingredient of a good deal of the lemonade manufactured in London. It may be made by macerating 2 lemons sliced, and 2 ounces of sugar in 1 pint of boiling water till cool and then straining.

LENTILS, *len'tilz* [Lat. *lentus*, gentle] are purgatives which act in a gentle manner, and have a soothing effect. (See CALMANTICS.)

LIMPING, *len'ting* [Lat.] is a feeble on the skin, so named from its resemblance to lameness. (See HICKLES.)

LARVIA or **LARVIUM**, *lārv'ē-ūm* [Gr. *larpis*, a scutle] is a gen. of the nat. ord. *Cruciferae*. *L. sativum* is the garden cress well known as a pungent salad. It is stomachic, antiseptic and antiscorbutic and is commonly used with the herb of the mustard plant. (See *BRASSICA*.)

LEPROSY or **LEPROTIS**, *lep'ro-sē* [Gr. *lepros* staining], is a disease characterized by the formation of scaly patches on the skin of different sizes, but having always nearly a circular form. Physicians distinguish three varieties of this disease—*Lepros vulgaris* or common leprosy, *Lepros albus*, or white leprosy, and *Lepros nigricans*, or black leprosy. Leprosy first manifests itself in small distinct reddish elevations of the cuticle, which enlarge till they sometimes attain the size of a crown piece. They are covered with scales, which accumulate and form a thick prominent crust, and are quickly reproduced as they fall off. This disease usually makes its appearance first about the nose or elbow, and extends by degrees along the extremities till some times the whole body becomes affected by it. Its progress is, in general, very slow, and it may continue in the same state for years. The general health of the patient is but little disturbed by this disease. In *lepro albus* the scaly patches are smaller than in *lepro vulgaris*, and have also their central parts depressed or indented. *Lepræ nigricans* differs from the others chiefly in the colour of the patches which are dark and livid. This disease sometimes

Levator.

makes its appearance without any apparent cause, sometimes it may be induced by exposure to cold or damp, and sometimes it is evidently hereditary. Treatment—It is generally tedious of cure. The diet should be light and moderate, and all heating and stimulating liquors avoided. Externally, warm baths, sulphur baths, and preparations of tar or creasote, are useful. The constitutional treatment will depend upon the condition of the body, if weakly, tonics, as quinine and iron, are to be administered. Several obstinate cases are said to have been cured by administering 10 drops of sulphuric acid three times a day in ½ pint of water, and bathing the part with a solution of ½ drachm of the acid in a pint of water. A solution of arsenic is often of advantage, but it can only be safely used under medical superintendence. (See ARSENIC.) This disease appears to have been much more prevalent, and of a severer type in ancient than in modern times; if indeed, this is the same disease, many being of opinion that the leprosy of ancient times resembled rather what is now known as elephantiasis. (See ELEPHANTIASIS.)

LESION, *lē'shōn* [Lat. *laedo*, I hurt], is a term used to denote any kind of wound or bodily injury.

LATHARGY, *lēth'ar-gē* [Gr. *lethe*, forgetfulness; *argos*, inactivity] is a state of unnaturally profound and continuous sleep. It is intermediate between heavy sleep and a state of complete coma, and may result from severe exertion of the body or mind, but it is also frequently produced by congestion of blood in the vessels of the brain, and hence it is often a symptom of great danger, frequently preceding an attack of apoplexy. It may also be caused by the action of any narcotic substance, or of alcoholic liquors. In general the cure is effected by the removal of the cause by which it has been brought about. If the result of a disturbance of blood to the head, then topical bleedings by cupping, and purgatives, may be required, but if, on the other hand, it proceed from nervous weakness, then tonics, stimulants, and a generous diet are necessary. (See APOLYXX, COMA, INTOXICATION.)

LATTICE (See LACTURA.)

LATCOMA, *lāt'kō-mā* [Gr. *latikos*, white] is applied to a white opacity of the cornea of the eye. It is occasioned by acute inflammation, causing a deposit of lymph either upon the surface or into the substance of the cornea. When merely superficial it often passes away with the cessation of the inflammation, but when deep-seated it is frequently incurable. Antigout lotions are generally recommended. (See EYES, DISEASES OF THE.)

LEVATOR, *lē-vā-tōr* [Lat. *levare*, I raise] a name given to certain muscles which are

Levigation.

employed in lifting the part to which they are attached, as the *levator anguli oris* which raises the angle of the mouth.

LEVIGATION, *lev-i-ga-tion* [Lat. *levigo*, I rub or grind fine], the process of rubbing down or pounding minerals into a paste with water.

LIX. or **LYE**, is a term applied to the solution of an alkali in water.

LICHENS, **LICHENS**, *l'ken-ess*, *l'kenz* [Gr. *leichen*], the Lichen ord. of thallogogenous *Ascomycetes*. Lichens are distributed over all parts of the world, and form a considerable proportion of the vegetation of the polar regions and of mountain tops. Many species possess nutritive properties, from containing starchy matter, such being also emollient and demulcent. Others contain bitter principles, which render them tonic and astringent. None are known to be poisonous.

* **LITERARIA**, *le-ter-ri-er-ia* [Gr. *leios*, smooth; *enteron*, the intestine], is a species of diarrhoea in which the food passes through the body in an almost unaltered state. (*See Diarrhoea*.)

LIFE, *lif* [Sax. *liif*, *liif*], is defined to be that "state or condition of a being that exhibits vital actions;" and it is thus placed in opposition to the term death, which implies the state of a being in which those actions have altogether ceased. Life is thus "the sum of the actions of an organized being." It includes all those phenomena which it is the province of the physiologist to consider. The laws of the vital phenomena are as yet to investigation as those which concern the phenomena of gravitation, electricity, or chemical affinity. A strict examination into their nature will show that, although not identical with physical phenomena, they are analogous to them, in so far as they take place according to a regular plan, and present themselves under fixed conditions. A definite acquaintance with these would give to physiological science the same kind of precision and comprehensiveness as it is the aim of the physical philosopher to attain in his branch of study. The intricacy, however, of the combinations under which the vital phenomena are usually presented to our observation renders a knowledge of their laws more difficult of attainment; but the success which has attended the philosophical "hog" of inquiry of late pursued by scientific physiologists is a most satisfactory proof that they are not beyond the reach of persevering and well-directed research. (*See Physiology, SANITARY Science.*)

LIGAMENT, *lig-a-men* [Lat. *ligamentum*], is a strong elastic membrane connecting the extremities of movable bones. Ligaments are divided into capsular and connective, the former being so called from surrounding the joints like a cap.

Lip.

LIGATURE, *lig'-a-ture* [Lat. *ligatura*], is applied to anything used in binding any part of the body. More particularly it is applied to the thread or silk used in the tying of arteries or veins that have been cut. The effects of a ligature is to divide the middle and internal coats, leaving the external and cellular coat whole, and thus the closing up of the canal is promoted by the adhesion of the cut edges of the internal coats. Hence the ligature should be small and round, not broad or flat, and should be tied with some degree of tightness.

LIGUM VITAE. (*See Guaiacum*.)

LILIMUM, *li'l-a-um* [Lat.], in Bot., the Lily, the typ. gen. of the nat. ord. *Liliaceæ*. *L. candidum* is the common white lily, the roots of which are sometimes made into a poultice for soothing or promoting the suppuration of inflamed tumours. They have also been used in times of scarcity for bread.

LIME. (*See Calcium, Citrus.*)

LINIMENT, *lin-i-men* [Lat. *linere*, I anoint], is an oily substance of a consistency intermediate between an ointment and oil, but so thin as to drop, and used to rub upon diseased parts. The term is also applied to a spirituous or other stimulating application used in the same way.

LINSEED. (*See LINUM.*)

LINT, *lint* [Lat. *linum*, flax], a term applied to old white linen cloth, scraped by hand or machinery, so as to render it soft and woolly. It is used for dressing wounds, ulcers, &c., either alone, or smeared with some suitable ointment or cerate.

LINUM, *li'-num* [Lat.], the most important genus of the nat. ord. *Linaceæ*. The fibres of *L. usitatissimum*, when prepared in a certain way, constitute *flax*, of which linen fabrics are made. Linen, when scraped, forms *lint*, which is so much used for surgical dressings. The seeds of the flax-plant are called *linseed*. The seed-coat contains much mucilage, and the nucleus of the seed oil. The oil may be readily obtained from the seeds by expression. The cake left after expression is known as *oil-cake*, and is much used as food for cattle. When powdered, it is sold as *linseed-meal*, which is much used for making poultices and for other purposes. *Linseed Pottage* is made by mixing 4 ounces of the meal gradually with 10 fluid ounces of boiling water and adding ½ fluid ounce of olive oil with constant stirring. This forms *linseed*, the best and most convenient of all emollient poultices.

LIP, *lip* [Sax. *lippis*, Lat. *labium*], in Anat., is the outer edge or border of the mouth. The lips are composed of muscular fibres, glands, and cellular tissue, covered by mucous membrane. They owe their extremely red colour to the thinness of the covering membrane, and their sen-

Lippitudo.

sitiveness to an abundant supply of minute fibrous fibres. They are not unfrequently affected with cancer. (See CANCER, also HARELIP.)

LIPPITUDO, *lip-pe-tu'do* [Lat. *lippus*, bleared-eyed], is a chronic inflammatory disease of the eyes, commonly called bleared-eyes. It consists in the exudation of a puriform humour from the margins of the eyelids, which often causes them to stick together during the night. (See ORBITAL-MIA.)

LIQUEFACTION, *lik-wr-fak'shun* [Lat. *liqueficio*], the act or operation of melting or dissolving, or the conversion of a solid into a liquid by the agency of heat. When heat is applied in sufficient quantity to any solid body, it changes its form and becomes liquid. In the case of the metals this change is more frequently called fusion. Bodies require very various degrees of temperature for liquefaction. Mercury, for example, fuses at 39° below zero; while wrought iron requires a temperature as high as 326°. Under the combined influence of pressure and cold, nearly all the gasses have been liquefied.

LIQUEUR, *lik'-yur* [Fr.], a palatable spirituous cordial composed of water, alcohol, sugar, and some aromatic infusion extracted from fruits, seeds, &c. Amongst the French they are divided into three classes. First, the ratafias, or simple liqueurs, in which the sugar, the alcohol, and the aromatic substance are in small quantities, as wine-water, noyeau, and the aniseet, cherry, and other ratafias. The second division consists of the oils, or fine liqueurs, with more saccharine and spirituous matter; as the anisette, curacao, &c. The third are the crenas, or superfine liqueurs, such as rosoglio, marachino, Damasc water, &c.

LIQUIDAMBAR, *lik-wid'äm'bar*, a gen. of balsamiferous trees, constituting the nat. ord. *Altingiaceæ*, or *Balsaminaceæ*. *L. orientale* yields the *liquid storax* of the shops, obtained from the inner bark, and is the *cortex thymumatis* or *storax bark* of pharmacologists. *Prepared storax* is purified by means of rectified spirit, and straining. It is stimulant and expectorant, and is recommended in chronic bronchitis, catarrh, gomorrhœa, &c. Dose, 10 to 20 grains twice a day.

LIQUOR AMMONIAE, *Potasse*, &c. (See AMMONIA, POTASH, &c.)

LIQUORIC (See GLYCERINIZA.)

LITHIASIS, *lith-i-sis* [Gr. *lithos*, a stone]. Is the presence of stone in the bladder or kidney. (See CALCULUS.) Also a disease of the eyelids, in which their margins are beset with small hard tumours.

LITHIUM, *lith'-e-üm*, in Chem.—symbol Li, equiv. 6.5, spec. grav. 0.59—one of the alkaline group of metals, of which potassium, sodium, calcium, and rubidium are the other members. It closely resembles these metals

Lithotomy.

in most of its properties, forming an alkali by its union with oxygen, decomposing water at ordinary temperatures, and having so low a specific gravity that it will float in the lightest known fluid. Lithia and its salts have lately been recommended in cases of gout and stone. Its action on the uric concretions is much more rapid than that of the salts of potassium and sodium. It is generally exhibited in the form of aerated carbonate or effervescent citrate in doses of from 5 to 10 fluid ounces.

LITHOTRIPHO, *li-thon-trip'tik* [Gr. *lithos*, a stone, and *tripto*, I break away], a term used to denote certain medicines which are believed to have the power of dissolving calculi in the bladder. The Vichy water, a solution of bicarbonate of soda saturated with carbonic acid, is said to have considerable effect, not only on lithic calculi, which it dissolves by virtue of its alkali, but on the phosphatic, which it affects through its carbonic acid, and disintegrates the animal matter which cements them together. (See CULCOLUS.)

LITHOTOMY, *li-thot'o-me* [Gr. *lithos*, a stone, and *temno*, I cut], is the operation of cutting into the bladder, in order to extract one or more stones or calculi from it. In the article CALCULUS we have already given an account of the nature and formation of these substances; and here we shall notice shortly the operation that is generally had recourse to in order to remove them. It is first of all necessary to ascertain the actual existence of the stone in the bladder, and that it is not engorged, or adherent to any portion of its substance. This is done by introducing a metallic instrument, called a *sound*, through the urethra into the bladder, by which the stone may be felt, and a wound produced by striking it. Several methods have been recommended of extracting the stone; but there are only two of them that can be adopted with any propriety: one of these is called the "high operation," from being performed immediately above the pubes. There are, however, several objections to this mode of operation; and it is now rarely adopted, except for some special reason, as where there is disease of the urethra. The other is called the "lateral operation," on account of the prostate gland and neck of the Madder being cut laterally. In this case the incisions are made in the perineum, and the neck and lateral part of the bladder laid open, so as to allow of the extraction of the stone. Where large, it is sometimes necessary to crush the stone, and take it away piecemeal; in every instance the cavity of the bladder ought to be examined with the finger, to ascertain that there is no other stone present. Where numerous, they may be removed with a scoop; and if broken down, tepid water should be injected, so as to remove every portion of the calcareous matter, and pre-

Lithotripsy.

vent a nucleus remaining for the formation of a future stone. The after-treatment is simple: the wound is left open or only covered with some simple ointment, and in a dependent position, that the urine may flow freely through it. The patient is to be kept quiet, and on a low regimen, and diuretic drinks administered, and any symptoms of inflammation are to be met by prompt antiphlogistic treatment. In the course of two or three days the urine begins to flow by the urethra, and is soon wholly discharged in that way.

LITHOTRIXY, *litho-*-*trese* [Gr. *lithos*, a stone, and *treis*, I break into pieces], is the operation of breaking into pieces a calculus in the bladder by means of instruments passed into that organ through the urethra, so that the fragments may be discharged through the latter, and thus the performance of the operation of lithotomy rendered unnecessary. This is one of the greatest triumphs of modern surgery, and its introduction has taken place since the commencement of the present century. Various modes of performing the operation have been adopted, but the most approved is that of passing a pair of strong sliding forceps, furnished with teeth, through the urethra into the bladder, and laying hold of the calculus, when the lower limb of the forceps is fixed in a vice, and the upper struck smartly with a hammer, so as to break the stone. The instrument is then withdrawn, and the fragments are afterwards voided with the urine. If portions remain, the operation is repeated from time to time. The operation is so simple, attended with so little danger, and productive of so little pain, as to render it, where it can be used, unmeasurably preferable to lithotomy. When the calculi are very large or very hard, it cannot be adopted.

LITMUS, *lit'-mus*, a blue colouring matter obtained from the *Rocella tinctoria*, and moistened with a solution of carbonate of potash. It is much used by chemists as a rough test for the presence of free acid or alkali in a solution or gaseous mixture. It is generally used in the form of litmus-paper, which is prepared in the following manner: Common commercial litmus is digested in water until a deep-blue solution is formed; it is then filtered, and pieces of bibulous paper are dipped into it, and dried. Blue litmus-paper is burnt red by acids. Reddened by being suspended for a few seconds over the fumes of acetic acid, it serves as a test for alkalies, which restore it to its original colour.

LIVER, *liv'-er* [See *Lifer*, Gr. *hepar*], is the secreting organ or gland by which the bile is formed. It is situated in the right hypochondriac and epigastric regions below the diaphragm, and is of a reddish-brown colour. Its form is irregular, being convex on the upper surface, irregularly concave

Liver.

below, very thick behind, and very thin in front; and in the adult it generally weighs from three to four pounds. It is divided into two principal lobes—the right and left, the former of which is by much the larger. They are divided on the upper side by a broad ligament, and below by a considerable depression, or fossa. Between and below these two lobes is a smaller lobe, called *lobulus Spigelii*, which is bounded on the left by the fissure for the ligament of the ductus venosus; on the right by the fissure for the vena cava. The *lobulus caudatus* is a tail-like process of the liver, stretching downwards from the middle of the right lobe to the *lobulus Spigelii*. The liver, like the other viscera of the abdomen, receives an investment from the lining membrane of that cavity—the peritoneum, which, being reflected from it at different points, forms broad bands, connecting it with the surrounding parts. An investment of areolar tissue is also spread over the organ, extending into the interior, and forming thin but dense sheaths to the vessels and canals, called the capsule of Glisson. The proper tissue of the liver is composed of a great number of granular bodies, of the size of millet, and called lobules, of a foliated appearance. The blood-vessels of the liver are the hepatic artery and veins and the vena portae; the lymphatics are numerous, and the nerves are supplied from the pneumogastric and phrenic, and the hepatic plexus. The liver thus receives two kinds of blood—arterial, by means of the hepatic artery, in small quantity, destined principally for the nourishment of the gland; and venous, by the vena portae, in much larger quantity, from which the bile is principally formed. The tributary branches, by the junction of which the main trunk of the portal vein is formed, comprise the veins which receive the blood from the stomach and intestinal canal, the spleen, pancreas, and gall-bladder. From those various sources, then, venous blood is poured into the liver by the vena portae, which divides and subdivides, like an artery, till it reaches the interlobular spaces, forming a freely anastomosing network throughout the organ, and constituting the interlobular veins. From these interlobular veins proceed, on every side, minute capillaries, which form networks, that seem to make up nearly the whole substance of the lobules. Through the capillaries the blood passes into intra-lobular veins, of which one, which, spreading branches, occupies the centre or axis of each lobule; and these intra-lobular veins, by successive junction and conflux, make up the trunks of the hepatic veins, by which the blood of the portal vein, after secreting the bile, is carried from the liver. The secretion of bile (see BILE), though the chief and most obvious of the functions of the liver, is not the only one which it has to

Lixivation.

partium, for recent discoveries have shown that important changes are effected in certain constituents of the blood, in its transit through this gland, whereby they are rendered more fit for their subsequent purposes in the animal economy. From the labours of M C Bernard and others, it appears that the low form of albuminous matter conveyed from the alimentary canal by the portal vein requires to be submitted to the influence of the liver before it can be assimilated by the blood. The liver also possesses the remarkable property of forming sugar out of principles in the blood which contain no trace of saccharine or amylaceous matter. The excretory apparatus of the liver consists of the hepatic, common, and cystic ducts, and the gall bladder. The biliary ducts commence by small twigs in each lobule, and join, forming, where they converge from the gland, the hepatic duct. This duct, after passing down for a short distance, is joined at an angle by the cystic duct from the gall bladder. The common duct thus formed is called the *ductus communis colleducus*, and empties itself into the duodenum. The retention of the materials of the bile in the blood acts like a poison upon the nervous system, and if the separation of secretion is complete, death soon takes place. Much of the cerebral disturbance accompanying dyspepsia (some forms of which are popularly known as "liver complaint") is doubtless due to deficiency of the biliary secretion, and the non elimination of certain deleterious constituents. (For disease of the liver, see BILLI, BILIOU, DYSPEPSIA, HEPATITIS, &c.)

LIXIVIATION, a process of separating the soluble from the insoluble portions of compounds by steeping and washing in water. The extraction of the soluble salts contained in kelp is an example of lixiviation.

LOBE, *tobe* [Lat. *lobus*] is a term applied to the more or less separate parts of which the glands of the body are composed. Thus we have the lobes of the brain, lungs, liver, &c. Lobe is also applied to the pendant portion of the ear. (See EAR.)

LOBELIA *lob-e-ly-a*, the typical gen. of the nat. ord. *Lobeliaceae*. The most important species is *L. inflata*, Indian tobacco, a native of North America. The flowering herbs and seeds have been extensively employed, especially in Africa, for their sedative, anti-spasmodic, narcotic, and expectorant effects. It is frequently found beneficial in cases of chronic asthma. Lobelia resembles tobacco in its action, but requires to be used with care, as several fatal cases of poisoning have resulted from its empirical use. The tincture is formed by macerating 2½ ounces of lobelia, coarsely powdered, in 1 pint of proof spirit for 48 hours, and is given in doses of 10 minims to ¼ fluid drachm. The *etheral tincture* is formed by macerating 2½ ounces of lobelia, coarsely powdered, in 1

Longissimus Dorsi.

pint of spirits of ether. Dose, 10 minims to ¼ fluid drachm.

LOCK-JAW. (See TETANUS.)

LOCUST-TREE (See HEMIMYRA.)

LOGWOOD, *log-wood*, is the cuttings or rasplings of the wood of the *Hematoxylon campechianum* (See HEMATOXYLON.)

LOINS, *loins*, is applied to the lower and posterior part of the trunk of the body, or the space between the upper edge of the pelvis and the last of the ribs. The lower end of the vertebral column is in this region, and the vertebrae composing it are termed the lumbar vertebrae.

LONGEVITY, *long-e-tye* [Lat. *longa vita*, long life], signifies length of life. Many instances are cited of men living in the ancient world more than 100 years, and Lord Bacon, in his "History of Life and Death," quotes as a fact unquestioned that, a few years before he wrote, a mortal dance was performed in Herefordshire, at the May games, by eight men, whose united ages amounted to 800 years. In the seventeenth century, some time after Bacon, according to documents printed in the "Philosophical Transactions of the Royal Society," Thomas Parry lived 123 years and 9 months, and Henry Jenkins 109 years. The evidence, however, is by no means conclusive, as it evidently rests on uncertain tradition, and on the very fallible memories of illiterate old men. There is every reason to believe that as civilization extends, and the laws that affect health are understood and acted upon, the duration of life will be much increased. Instances of longevity show what the human frame is capable of attaining to, and as the laws of health come to be more observed, healthier parents will give birth to healthier children from generation to generation. Indeed, there are not wanting those who look upon the natural duration of life as a hundred years, and who literally receive the language of the prophet, that "there shall be no more the curse an infant of days, nor an old man that hath not filled his days, for the child shall die an hundred years old, but the sinner being an hundred years old shall be assured." And they shall build houses, and inhabit them, and they shall plant vineyards, and eat the fruit of them. They shall not build, and another inhabit; they shall not plant, and another eat; for as the days of a tree are the days of my people, and mine elect shall long enjoy the work of their hands."—Isaiah xlv. 20-22.

The preservation of health ought to form an essential part of municipal and national policy. (See SANITARY SCIENCE.)

LONGISSIMUM DORSI, *lon-jis-i-mus dor-si* [Lat. the longest (muscle) of the back] is a muscle of the back which rises from the posterior surface of the os sacrum apud the transverse and oblique processes of the lumbar vertebrae, and is inserted by small double tendons into the posterior and in-

Longus Colli.

terior part of all the transverse processes of the vertebrae of the back, sending off also bundles of fibres to all the ribs between their tubercles and angles. Its use is to support the spine, and bend it backwards and to one side.

Longus Colli, *long'-gus kol'-li* [Lat., the long (muscle) of the neck], is a muscle situated close to the anterior and lateral part of the vertebrae of the neck. It arises within the thorax from the third superior vertebrae of the back, and is also connected by tendons with the four last vertebrae of the neck, its insertion being into the fore part of the second vertebrae of the neck, near its fellow. Its use, when acting singly, is to move the neck to one side; but when both act, they serve to bring the neck directly forwards.

Lonicera, or Honysuckle, *lon-i-sé-rá*, a gen. of very ornamental shrubs, closely allied to the genus *Ceratifolium*. There are several species indigenous in England. The flowers of several of these are highly fragrant and ornamental, and preparations of the leaves are sometimes used for cleaning foul ulcers, or for removing diseases of the skin, though it is doubtful if they possess any real virtue.

Loosestrife. (See LYTHRUM.)

Lotion, *lo'-she-on* [Lat. *lotio*], is a form of medicine made up of a solution of various medicinal substances in water or some other liquid, and designed for external application. They serve various purposes, according to the ingredients of which they are composed; some tending to allay pain, others to stimulate indolent tumours; some to reduce the inflammation of a part, others to remove deformities. Many of the nostrums that are sold as lotions are composed of very active substances, and frequently produce very serious effects.

Lousz, *louse* [Sax. *lus*], a term applied to certain disagreeable and unseemly parasitic insects. They are distinguished by having six feet formed for walking, a mouth furnished with a proboscis, antennæ as long as the thorax; the abdomen, which is formed of several segments, depressed. The human race is subject to the attacks of several species; among which are the *Pediculus humani corporis*, or body louse, principally occurring in adults who are dirty in their personal habits; and the *P. humani capitis*, or common louse, most frequent in children. The best antidote against these disgusting insects is cleanliness. Although of rare occurrence now, the lousy disease was not infrequent among the ancients. Herod, Antiochus, Callisthenes, Sylla, and many others, are supposed to have suffered from this complaint; and cases of it occur occasionally in the present day. In order to their removal, the parts should be first of all well washed with yellow ox. soft soap and hot water, and then anointed with mercurial ointment or the gly-

Lungs.

cerine of carbolic acid. The clothes should also be destroyed, or exposed to a temperature of 180°, or well fumigated with sulphur.

Lozenge, or *Tacchiscus*, *los-enž* [Fr., losange], a form in which medicines are sometimes administered, in order that they may reach the stomach gradually, and act as much and as long as possible upon the mouth, pharynx, and larynx. They are flat and circular or oval in shape, and composed of masticage, gum, sugar, and other substances.

Lues, *lu'-ës* [Gr. *lúo*, I dissolve], a general term applied to a pestilence or poison, as *lues neurodes*, or typhus fever; *lues venera*, &c.

Lumbago, *lum-ba'-go* [Lat. *Jumbus*, the loin], is used to denote a rheumatic affection of the muscles about the loins. (See RHEUMATISM.)

Lumbar [Lat. *lumbolis*] denotes what belongs to, or is connected with, the lous, as the *lumbar region*, *lumbar vertebrae*, &c.

Lunacy. (See INSANITY.)

Lunar Caustic, a term applied to nitrate of silver, cast in sticks, and used by surgeons for cauterizing purposes. (See SILVER, Nitrate of.)

Lungs, *lung* [Sax. *lungan*], are two large conical bodies placed one in each of the lateral cavities of the chest, and separated from each other by the heart and large vessels and by two layers of the pleura, which form the mediastinum or median partition. They occupy by far the larger portion of the cavity of the chest, and during life accurately adapt themselves to its varying dimensions. Each lung is invested by an exceedingly delicate serous membrane, termed the pleura. Each pleura forms an independent sheet quite distinct from the other, enclosing the corresponding lung as far as its root, and then reflected back upon the inner surface of the thorax. The portion investing the surface of the lung is called the *pleura pulmonalis*, while that which lines the inner surface of the chest is called the *pleura costalis*. Each lung is of a conical shape, with a broad concave base resting upon the convex surface of the diaphragm. The apex forms a blunted point, which extends into the root of the neck about an inch above the level of the first rib. The outer or thoracic surface is smooth, convex, and of considerable extent, corresponding in the form of the cavity of the chest, and of great depth behind than in front. The inner surface is flattened or concave, presenting in front a depression corresponding to the convex surface of the pericardium, and behind a deep fissure (the *hilum pulmonis*) which gives attachment to the root of the lung. Each lung is divided into two lobes, a lower and an upper, by a long and deep fissure, which commences upon the upper portion of the posterior border of the lung, about three inches from the apex, and extends obliquely

Lungs.

downwards and forwards to the lower part of the anterior border, penetrating nearly to the root of the organ. In the right lung, the upper lobe is partially divided by a second and shorter fissure, extending from the middle of the principal fissure forwards and upwards to the anterior margin of the organ, and marking off a small triangular portion called the middle lobe. The weight of the lungs varies much, according to the quantity of blood, mucus, or serous fluid that they may contain; but in general they are found to be between 36 and 42 ounces,—the right lung being about two ounces heavier than the left. The lungs are heavier in the male than in the female, being in the former in proportion to the body as 1 to 37, in the latter as to 43. The substance of the lung is of a slight, porous, and spongy nature, and when healthy is buoyant in water; but in the fetus, before respiration has taken place, and in 140 cases of congestion or consolidation from disease, the entire lungs, or portions of them, will sink in that fluid. The specific gravity of a healthy lung after death varies from 345 to 746, water being 1,000. At birth the lungs are of a pinkish-white colour, but as life advances they become darker, and are mottled or variegated with patches of a dark slate colour, assuming at length a dark black colour. The pulmonary tissue is endowed with great elasticity, in consequence of which the lungs collapse by atmospheric pressure, when the thorax is opened, to about one-third of their bulk. The lungs are composed of an external or serous coat, a sub-serous areolar tissue, and the pulmonary substance. The serous coat is derived from the pleura, as already mentioned, beneath which is a thin layer of sub-serous areolar membrane, containing a large proportion of elastic fibres. It invests the entire surface of the lung, and extends inwards between the lobules. The substance of the lung itself is composed of numerous lobules, which, although closely connected together by an interlobular areolar tissue, are quite distinct from one another, and are easily separable in the fetus. These lobules are of various sizes, those on the surface being large and of a pyramidal form, with the base turned toward the surface; those in the interior being smaller, and of various forms. Each lobule may be regarded as a lung in miniature, the fine elements entering into its composition all go to form the lung itself. Each is composed of one of the ramifications of a bronchial tube and its terminal air-cells; of the ramifications of the pulmonary and bronchial vessels, lymphatics and nerves; all being connected together by areolar fibrous tissue. The air-cells are small polyhedral alveolar recesses, separated from each other by thin septa, and communicating freely with the intercellular passages. They vary from $\frac{1}{10}$ to $\frac{1}{8}$ of an inch in diameter, and are larger on the surface

Lupulus.

than in the interior. The pulmonary artery conveys the venous blood to the lungs. It divides and subdivides into branches, which accompany the bronchial tubes, and terminate in a dense capillary network upon the walls of the intercellular passages and nerves. From this network, the radicles of the pulmonary veins arise, and, coalescing into large branches, at length accompany the arteries and return the blood, purified by its passage through the capillaries to the heart. The pulmonary arteries and veins differ from the same vessels in other parts of the body, inasmuch as the former convey dark blood, the latter red blood. The pulmonary veins are also destitute of valves. There are two sets of re-absorbents, deep-seated and superficial. They pass to the bronchial glands at the roots of the lungs, and then proceed partly to the thoracic duct on the left side, and partly to a corresponding vessel on the right. The lungs are the great organs of respiration. The air passes through the bronchial tubes until it reaches the minute air-cells, on the walls of which the blood circulates in a network of capillaries in such a way that it is brought into immediate connection with the atmospheric air, which is drawn in by each inspiration. In the act of breathing, the capacity of the chest is increased by the action of certain muscles, when the air rushes in to fill the vacuum, and expansion of the lungs takes place; and then, the muscular movement ceasing, the ribs by their weight and elasticity contract and force out the air. From fifteen to twenty-two is the average number of respirations in a minute; but this number may be very greatly increased by excitement, exercise, or disease. The lobules are not all distended with air in ordinary inspiration, nor even by the most powerful efforts that can be made. Those of the upper parts of the lungs seem to be most filled, and are most constantly in action. The average quantity of air contained in the lungs is estimated at about 200 cubic inches. In each ordinary act of inspiration, or expiration, a change of from 20 to 30 cubic inches is supposed to take place. The lungs, from their highly organized structure and their incessant exercise, are, perhaps, more liable to disease than any other part of the body. The diseases to which they are mostly liable are, in their first stages at least, of an inflammatory character, and are mostly produced by exposure to damp and cold, sudden atmospheric changes and transitions of temperature, want of proper nourishment, &c. The state of the lungs can now be ascertained with tolerable certainty by means of auscultation (which see). For particular diseases of the lungs, see ASTHMA, BRONCHITIS, НЕМОРГИЯ, PLEURITIS, ПНЕУМОНИЯ, PNEUMONIA. Paroxysms.—(See Quain's "Anatomy," by Sharpey; Gray's "Anatomy.")

LUPULUS OR HOPS. (See HUMULUS.)

Lupus

LUPUS, *lu'-pus* [Lat. a wolf], is applied to a malignant disease of the skin, which eats away the parts attacked and hence its comparison to a wolf. It commences usually in the form of indolent soft swelling swellings or tubercles which proceed slowly to ulceration and eat into the parts, or it may heal in one part and spread in another. It commonly attacks the face frequently destroying the alae of the nose or the eyelids, and may spread over the entire face. Medical men usually distinguish two kinds, *L. exensis* and *L. non exensis*, but they appear to be varieties of the same disease.

Treatment — The treatment consists in strengthening the system by nutritious diet tonics as quinine and iron codliver oil and change of air. Besides this the disease is to be attacked locally by caustics.

In the severer form the only cure lies in its thorough extirpation and therefore the most active caustics should be chosen. This disease was formerly known as *no'ne tangere*.

LUXATION, *luks' ch' shun* [Lat. *laxo*, from *laxo* I put out of joint] is dislocation of a bone (see DISLOCATiON).

Lycopodium, *lu'ko por'iu'lon* the Luff ball a gen. of *Fungi*. When the species *L. giganteum* is submitted to combustion fumes arise which are powerfully narcotic. The vapour has been proposed as an anaesthetic agent instead of chloroform and the dust is sometimes used by the common people to stop hemorrhage.

Lycopodium, *lu'ko por'iu'lon* a gen. of the nat. ord. *Lolmoniales*. The species *L. esculentum* produces the juicy acid in it, called *lime apples* or *tomatoes* much employed in the preparation of sautes.

Lycopodium, *lu'ko po'ru'm* in Bot. the typical gen. of the nat. ord. *Lycopodiaceae*, or club mosses. The species *L. clavatum* is the common club moss or inconspicuous plant found on heaths. Pharmacologists state that it possesses well marked emetic and purgative properties. The sprigs have been employed externally for their absorbent qualities in erysipelas and various cutaneous affections. They are of a yellow colour, and are sometimes styled *vegetable sulphur*.

Lymph, *limf* [Lat. *lympha* water] is a thin transparent colourless fluid which is found in the lymphatic or absorbent vessels abundantly distributed over the body (See LYMPHATIC). Its taste is saline, and it has a faint scarcely perceptible smell. When examined by the microscope it is seen to consist of a clear liquid with corpuscles floating in it, which agree entirely with the pale corpuscles of the blood.

Lymphatics, *limf'at'ik* is the name given to a class of vessels in the human body from their containing lymph. They are also called absorbents from the property they possess of absorbing certain materials for the replenishing of the blood and conveying

Lymphatics.

them into the circulation. The lacteals differ from the lymphatics proper only in containing a milk like fluid—the chyle, which they take up in the intestines during the process of digestion and convey into the blood through the thoracic duct. The lymphatics are exceedingly delicate vessels, their coats being so transparent that their fluid contents are readily seen through them. They are found in nearly all the textures and organs of the body which receive blood, with the exception of the substance of the brain and spinal cord. In the different regions of the body, and in the several internal viscera they are arranged into a superficial and a deep set, the former running immediately beneath the skin or under the membranous coats enveloping internal organs the latter usually accompanying the deep *metastolic* blood vessels. The origin of the lymphatics is most common in the form of networks or plexuses out of which simple vessels emerge at various points and proceed directly to lymphatic glands or to join larger lymphatic trunks. They are interrupted at intervals by constrictions which give to them a knotted or beaded appearance, and these constrictions correspond to the presence of valves in the interior. Like the veins and arteries the lymphatics are composed of three parts, an internal middle and external. The lymphatic or absorbent glands named also *lymphoid* are small solid bodies situated in the course of the lymphatic and lacteal vessels and through which their contents pass in their course towards their union with the blood. Their size is very variable some being not much bigger than a hemp seed others as large or larger than a kidney bean. They are collected in numbers along the course of the great vessels of the neck also in the thorax and abdomen especially in the mesentery and alongside the aorta, vena cava, inferior and iliac vessels, also in the axilla and groin and on the popliteal vessels. A lymphatic or lacteal previous to entering a gland divides into several small branches, which are named afferent vessels. As they enter, their external coat becomes continuous with the capsule of the gland, and the vessels much thinner divide and subdivide while pursuing a tortuous course, and finally anastomosing form a plexus. The vessels comprising this plexus unite to form two or more efferent vessels which, on emerging from the gland are again interwoven with their external coat. Capillary vessels are abundantly distributed on the walls of the lymphatics in the glands. The absorbent system discharges its contents into the veins at two points—namely, at the junction of the subclavian and internal jugular veins of the left side by the thoracic duct, and in the corresponding part of the veins of the right side by the right lymphatic

Lythrum.

trunk. The openings are guarded by valves (see Quain's "Anatomy," by Sharpey and Flis.)

LYTHRUM *Lythrum* [Gr. *lythron*, blood] is a genus of plants of the nat ord. *Lythraceae* or *Dicotyledones*. The *L. salicaria*, the common purple loosestrife or willow herb, is a gentle astringent and tonic, and is sometimes employed in chronic diarrhoea and dysentery.

M.

MACE (See MYRTICAE.)

MACERATION *mā-sē-rā-shun* [Lat. *macer*, I soften with water] is the infusion of substances in cold liquids. The term is usually employed with regard to vegetable substances when they are reduced to powder and exposed to the action of water or any other liquid without the assistance of heat in which last respect it differs from *digestion*. Maceration is useful either when it is required merely to soften the parts of the substance operated on as when cinnamon and cloves are macerated in wine before distillation or in cases where it would be injurious, as when volatile or aromatic substances are used. Spirits, wine, vinegar and ether are likewise sometimes employed in maceration in order to form tinctures &c. The operation is usually continued from 12 or 24 hours to 7 days.

MACHROPHYLLE, *māk-ro-fil'ē* [Gr. *makros*, long, and *phyllē*, pepper] a genus of the nat ord. *Piperaceae*. The species *M. metylecina* is the well rated Aava pepper shrub from the rhizome of which the south sea Islanders prepared an intoxicating and narcotic drink called *ava*, or *sasa*. The plant has been used medicinally in chronic rheumatism &c.

MADDIE (See RUBIA.)

MADNESS (See INSANITY.)

MAGNESIA *māg-ne-sē-a* is one of a group of alkaline earths of which baryta, strontia and lime form the other members. It is the oxide of the metal magnesium and is generally prepared by calcining the carbonate at a high heat, until it glows with a peculiar luminous appearance called brightening. It is a white powder, varying in density according to the source from which it is obtained. It is inflammable by heat, and has never been fused. It slowly absorbs carbonic acid from water from the air, moistened with water, it combines with it, raising the temperature during the union, and giving rise to hydrate of magnesia. It is sparingly soluble in water, forming a solution exhibiting an alkaline reaction. It is used as an antacid and cathartic in doses of from 10 to 60 grains. There are three carbonates of magnesia—the bicarbonate, monocarbonate, and subcarbonate. The subcarbonate is a bulky white powder, known as light car-

Malaria.

bonate of magnesia. The bicarbonate, or heavy carbonate, is much less bulky than the preceding. Both forms are extensively used in medicine as a cathartic and antacid, in doses of from 10 to 60 grains. The solution of carbonate of magnesia, or fluid magnesia, is formed by mixing 2 ounces of sulphate of magnesia and 2½ c. inches of carbonate of soda with a sufficiency of distilled water by a complicated process which it is unnecessary to detail. Dose, 1 to 2 fluid ounces. The extract of magnesia is much used in pharmacy as a gentle aperient. It is pre.ared by mixing powdered carbonate of magnesia and calcined gypsum into a paste with a small quantity of water and granulating. A teaspoonful in water forms a pleasant effervescing cathartic of a gentle character. The sulphite of magnesia occurs in *in situ* as *burnt salt* an efflorescent of certain magnesium minerals. It exists in sea water and certain spring waters in consideral. quantities. The springs of Eptor, Helvetian, Srebitz, and Puhua are famous for the amount of this salt which they contain. The sulphite of magnesia so extensively used in medicine as a cathartic is prepared in several ways—the most common of which is to dissolve dolomite or magnesia in lime-stone (carbonate of lime and magnesia), in dilute sulphuric acid by which means sulphate of lime is precipitated and the sulphate of magnesia may be obtained by evaporation to crystallization. Its other sources are the mother liquors of sea salt, and also alum liqours. It is very soluble in water, 10 parts of water dissolving 68 parts of the salt at a lining temperature, and 160 parts at boiling point. Dose, 60 grains to 1 ounce.

MAGNISIUM *māg-nē-ūm*—symbol Mg., equiv. 24.354, f.p.v. 1743—the metallic base of the all alum earth magnesia. It is a white, inodorous silvery metal, constant in dry air but becoming covered with a white film of magnesia in the presence of moisture. It forms one oxide—magnesia. In many of its characters metallic magnesia resembles zinc.

MAGNETISM, ANIMAL (See METAMARISM.)
MAGNOLIACEA, *māg-nō-lē-ā'ē-ā* in Bot. the Magnolia fam., a nat ord. of *Dicotyledones* sub class *Thalamiflorae*. The plants of this order are remarkable for the fragrance and beauty of their flowers and foliage; hence they are favorite objects of culture in this country, either as hardy outdoor plants, or as stove and greenhouse plants. Medicinally, they are chiefly remarkable for their bitter, tonic, aromatic properties. The bark of *Magnolia glauca*, the swamp magnolia, or blue wood tree, resembles cinchona in its action.

MALT (See ZEA.)

MALARIA, and **MIAISM**, *Māl-ār'-ē-ā, miāz'm* [from Gr. *mala*, I am fit]—The former of these words is now generally employed to

Malaria.

designate a certain effluvium or emanation from marshy ground, and the latter, with the adjunct of marsh, is used in the same sense. *Malaria*, or *miasm*, by itself, denotes simply contagion (which see). This poison is not recognizable by the senses, nor can it be detected by chemical tests; it is known only by its effects upon the system, and these the observation of centuries has made well known to us. Marshes whether salt or fresh, are prolific sources of malaria, especially in a certain stage of the drying process under a hot sun. But wet meadow-grounds, alternately flooded and drained, the mud left by the returning tide in inlets and estuaries, parts covered with low and dense brushwood or with reeds and grass, a country newly cleared of its wood, particularly in warm climates, are all fertile sources of malaria. In tropical countries it is remarked that the evolution of malaria commences immediately on the falling of the rain, and the sickness abates as the ground gets thoroughly wetted. A marsh completely covered with water is innocuous; it is only when the moisture is being dried up under a hot sun that it becomes pestilential. In the case of inundation, it is at their subsidence that sickness prevails. Dr. Ferguson, who was with the British army in Spain, has furnished us with many instances of the small degree of moisture that may suffice to produce malaria in its most intense form. (See "On the Nature and History of Malaria" by William Ferguson, M.D., &c., Edinburgh, 1821.) He lays it down as a rule to which there is no exception in climate of high or low pressure, that the only condition indispensable to the production of the marsh poison on all surfaces capable of absorption, is the presence of water; whereas it had previously recently abounded. Heat is the agent in it active in the production of malaria in all soils and situations capable of engendering it; hence, in this country even the milder forms of malignant disease are rarely seen before the vernal or after the autumnal equinox, and whenever they exist their prevalence is terminated by the cold of winter. As a general rule, malaria is more virulent in proportion to the proximity to its source, but to this rule there are various exceptions. The distance to which marshy emanations may extend by gradual diffusion has been calculated to be 1,400 to 1,600 feet in elevation and from 600 to 1,000 feet in a horizontal direction, and these limits it is said cannot be exceeded in Europe, but in equatorial regions the activity of the poison is greater; and in the West Indies, vessels 9,000 feet from the marshy coast have felt the effects of its baneful influence. When winds are in operation the extent to which the poison may be transported is unknown, but instances are recorded of its being conveyed three or more miles. Though malaria

Manganese.

is principally owing to heat, it is not in the hottest part of the day that its influence is most pernicious, but in the evening or night. Besides the more familiar effects of malaria—intermittent and remittent fevers—the there are a number of obscure affections of the spleen, liver, stomach, intestines, and mesenteric glands, also dropsy, apoplexy, palpitation, &c., &c., that are traced to its long continued application while cholera, dysentery, and diarrhea are restricted to its more brief agency. Natives of marshy districts, who constantly reside in them have their whole bodily and mental constitution contaminated by the poison which they inhale. Their aspect is sallow and prematurely senile, their muscles flaccid, hair lank, stature stunted, and their intellectual and moral character low and degraded. The progress of civilization and of agriculture is a principal means in diminishing the domain of malaria. In many situations a screen of woods has often been found of great benefit between the habitations and the marshes. Nutritious diet, and whatever is most conducive to health, should be observed by persons exposed to the influence of malaria. (See "The Cyclopaedia of Domestic Medicine," by Forbes, Tweedie, and Conolly.)

MALFORMITY (See DEFORMITY)

MARIGOLD *mar'lik* [Lat. *calendula*] an annual or biennial herb found abundantly in most cultivated fruits, especially in tulips, apples, foxgloves, and currants. The flowers of the ordinary garden shrub also furnish large quantities of it, but it is most usually obtained from the berries of the common ash.

MAYHORN, *ma'ho'rn* [Lat. *malus*] a term applied to pestilential fevers and to local diseases of an malignant nature, as croup.

MILEUS *m'leus* is a term applied to one of the bones of the ear from its resemblance to a mallet. (See MALLEUS.)

MALLOW (See MALVA and ALTHaea) *m'la'w* [Lat.] the Mallow, the typical gen. of the nat. ord. *Malaceæ*. The species *M. syriaca* is the common mallow, a handsome plant with large purplish flowers growing at roadside and in waste places. The root and leaves of the plant have similar properties to those parts of the marsh mallow. (See ALTHEA.)

MAMMA (See LIPPIST)

MANDRAKE, *man'dru'go'rd* [Lat. *mandragora*], a gen. of the nat. ord. *Solanaceæ*. *M. officinalis* is the true mandrake, and must not be confounded with the root of *Bryonia dioica* which is often called mandrake. The mandrake is an acro-narcotic poison, and was used by the ancients as an anaesthetic.

MANDRAKE (See MANDRAKA and BA-

ONIA)

MANGANESE, *man'ga'nes*, in Chem., symbol Mn, equiv. 57, sp. grav. 8.03.

Mangel Wurzel

The ores of manganese are somewhat abundantly distributed throughout the mineral kingdom generally in the form of black oxide. Manganese is of a greyish white colour brittle hard enough to scratch glass, and slightly magnetic. If exposed to the air, it speedily becomes oxidized, for which reason it should be preserved in some liquid hydrocarbon such as naphtha. Manganese combines with carbon and silica forming unimportant compounds. The manganeseates are very unstable, being decomposed by boiling and even by remaining in dilute solution. *Permanganic acid*, which is now largely used as a disinfectant, is described under its principal heading. Manganese is occasionally, but not often, employed in medicine. It is tonic and alterative in its action, much resembling iron. It is said to exert a specific influence on the liver. In large doses it is purgative. Dose of binoxide from 3 to 10 or 20 grains three times a day.

MANGL WURZEL (See BEET)

MANIA (See INSANITY)

MANGAIA is a root of the cassava plant of the first class of the Malpighiaceae. The species *M. utilissima* is the bitter cassava, is an important food producing plant. Cassava meal which is largely employed in the making of the cassava bread or cakes in common use among the inhabitant of tropical America is obtained by grating the washed roots and then subjecting the pulp to pressure and heat. Cassava starch, tapioca meal, or Brazilian arrowroot, and sago, are likewise prepared from the roots.

MANNA (See FRAXINUS)

MARANTA, *maranta*, the typical gen. of the nat. ord. *Martacaceae*. The species *M. arundinacea* yields West India arrowroot, one of the most pure and best known of the amyloids substances used as food. This is extracted from the rhizomes and tubers of the plant; it forms a very firm jelly, and is the most palatable and digestible starch known. It is nutritious and demulcent and well adapted for the diet of the sick, convalescent and for infants.

MARBL'D (See CANNINDA)

MARROW, *mar'ro* [L. *medulla ossium*] is a light fatty substance digested in the interior of the bones. Like ordinary adipose tissue, it consists of a tissue containing fat, with little vessels distributed to them. It is usually of a yellow colour, with 66 parts water, and 1 of areolar tissue, in 100 parts. In some parts it is of a reddish colour. In the fleshy the bones do not contain marrow but a transparent reddish fluid like bloody serum, only more consistent.

MARSHUM [Heb. *maror*, a bitter juice], a genus of plants of the nat. ord. Labiate. The *M. vulgare* or white horsemint, is an indigenous perennial plant, growing in waste

Materia Medica

grounds, and flowering in July. It has an intensely bitter, penetrating and durable taste. It is not officinal, but is much employed by the common people as a remedy for coughs asthma &c. It is tonic diuretic, and slightly laxative. The infusion (2 ounce to 1 pint of water) may be given in doses of 2 fluid ounces two or three times a day.

MARSH MARLOW (See AYRISH)

MATERIA MEDICA, *mat'riā med'ka* [Lat.], a general name for the substances and agents which are employed for the relief or cure of disease. The term is also applied to that branch of study which elucidates the nature and properties of such substances and agents. In medical schools it is customary to connect Materia Medica with Therapeutics, and to expand both departments of science in one course of lectures. Therapeutics may be described as that branch of study which treats of the application of the Materia Medica for the prevention and cure of disease. These allied branches of study are of the utmost importance, for by the thorough knowledge of the nature and action of medicines is obtained, it is impossible to know how and when to prescribe them. A knowledge of medicines therefore comprehend's an acquaintance with their external character, their sensible properties, their chemical qualities, and their mode of action as well as the manner of their preparation. The Materia Medica may be classified in two ways, the first being according to their natural history, and the second according to their physiological and therapeutic effects. In the natural history arrangement remedies obtained from the inorganic kingdom (mineral and chemical substances) form the first class, remedies yielded by the vegetable kingdom (herbs, fruits, roots, leaves, principles separated from plants &c.) form the second class, and remedies yielded by the animal kingdom (insects, fats, animal secretions, &c.) form the third class. Many classifications based upon the effects of remedies have been proposed, but they are all more or less imperfect. That adopted by Dr Royce in his excellent Manual of Materia Medica and Therapeutics, comprehends the principal features of all the best schemes of classification. The divisions of this arrangement are as follows —

A *Mechanical Remedies* — Diluents, Demulcents, Lomollents

B *Chemical Remedies* — Fuscariatic Acids, Alkalies, Antilithics, Disinfectants, Astringents, Antidotes

C *Vital Agents* — Vacuants, or Local Stimulants, Alteratives, Eructives, Sialagogues, Emetic, Expectorants, Diaphoretic, Diuretics, Cathartics, Anti-purulents, Emmenagogues, Rubefacients, General Stimulants Tonics, Stimulants and Aromatic Diffusibles and Special Stimulants, Depressants, or Cont. a Stimulants — Nar-

Materia Medica

cotors, Antispasmodics, Refrigerants, Sedatives.

The groups of medical agents ranged under the head of "Mechanical Remedies" are supposed to act only as physical agents or by their simple mechanical properties. *Demulcents* are remedies which are supposed to increase the fluidity of the blood, allaying thirst, diminishing the heat of the skin, and promoting perspiration and the secretion of urine. *Demulcents* and *Emollients* are substances which are calculated to soften and lubricate the parts to which they are applied, the former term being restricted to such as are intended for external application, thus arrowroot, calvay, &c. of jelly, and liquorice are demulcents, while liniments, embrocations and cataplasms are emollients. Under the head of "Chemical Remedies" are those agents which seem to act chiefly by producing chemical changes in the solids or fluids of the body. *Hartshorn* or *caustic* are substances employed for destroying the vitality of the part to which they are applied. *Acids* and *alkalies* act not upon the secretions as they act upon substances out of the body and respectively counteract alkalinity and acidity. *Antithetics* counteract the tendency to the deposition of urinary sediments or calculi. *Dissolvents* are suited to free the air of boughs and insects in general of the invisible particles which propagate disease, while *Antiseptics* prevent the decomposition of organic structures whether vegetable or animal. *Antispasmodics* are remedies which have the power of corrugating or of producing a contraction of the muscular fibres of the part to which they are applied, as well as of coagulating or precipitating albuminous fluids. *Antitoxins* are agents which counteract the effects of poison. The division "Vital Agents" includes those groups of medicines which are considered to act in a more special manner upon the living structures, &c. up in the muscular, sanguineous, and secretory systems, including *Emetics*, which cause increased secretion or evacuation from the digestive organs. *Aromatic* are remedies which, when continued for some time in comparatively small doses by degrees, and almost imperceptibly produce changes in the secretions and in disordered actions, *Irritants* which are applied to the mucous membrane of the nostrils, those which cause sneezing, being sometimes distinguished by the term *Sneezing-tonics*, *Sialagogues*, medicines which increase the secretion of saliva, *Emetics*, those which evacuate the stomach by vomiting, *Hæmoptorants*, which favour the expulsion of a portion of mucus from the organs within the chest, *Diaphoretics*, those which increase exhalation from the surface, and the natural function of perspiration - to the latter, when acting so as to produce sweat-

Measles.

ing, the term *Sudorifics* is applied, *Diuretics* have the power of augmenting the secretion of urine, *Cathartics* increase the peristaltic movements of the intestinal canal, evictuate its contents, and usually augment its mucous secretions, *Anthelmintics*, medicines prescribed for the destruction of worms, *Emmenagogues* for promoting the menstrual discharge when either retained or suspended, and *Rubefacients* which produce redness of the skin with warmth and increased sensibility. The second subdivision, *General stimulants*, includes those remedies which excite all the principal functions of life, by directly influencing the nervous system. *Tonic*, those which possess the power of gradually increasing the tone of the muscular fibre when relaxed and the vigour of the body when weakened by disease, and *Sedatives* or *Laxatives* which exert nervous power. *Aromatic stimulants* are those which are grateful in colour and taste, as the spices &c. *Diffusible stimulants* those which excite the whole system with great rapidity through the medium of the brain. The subdivision *Depressants* includes those medicines which are employed to subdue morbid action as *Narcotics*, which, by acting on the brain or spinal marrow relieve pain, control restlessness and procure sleep, *Anodynes* in which alay the irregular muscular contractions called spasms, *Refrigerants*, which diminish the force of the circulation and so reduce the heat of the body and *Sedatives*, which directly and primarily depress the powers of life without previously exciting nervous action or increasing the circulation - For particulars respecting these divisions, and the different substances which they comprise employed as medicines, the reader is referred to the special articles of this Dictionary, also to Dr. Royce's Manual mentioned above.

MALIC *mälik* the name applied to leaves of certain plants employed to stop bleeding. *Thermatic* was first brought into notice as a styptic in leech balsams, wands of sassafras &c. by Dr. Jeffreys in 1819, and it is now official in the British Pharmacopœia. The officinal plant is the *Intybea*, *citata* the dried leaves of which are made into an infusion (1 ounce to 1 pint of boiling distilled water) and given in doses of 1 to 4 fluid ounces. It is doubtful however, if it has any power in arresting internal hemorrhages, its virtue, extremely depending probably, solely upon the mechanical act on of the hairs which cover the surface of the leaves. (*See ANTANTHUS*)

MAMILLARY [*Lat. maxilla*] the jaw, denotes of or belonging to the jaw, as the maxillary bone, &c. (*See ANATOMY*)

MADDOX SALT (*See Colomium*)

MADDOX'S FEVER [*Lat. rubicula*] is a contagious fever of an inflammatory type, attended with a characteristic eruption and all the symptoms of a violent cold, watery

Measures.

discharge from the eyes and nose, dry cough, hoarseness, &c. *Symptoms*—It commences with the ordinary symptoms of fever, chilliness, loss of appetite, lassitude and is almost invariably attended with inflammation of the mucous membrane lining the air-passages. The eruption commonly appears on the fourth day, at first about the head and neck, then the trunk and arms, and finally reaching the lower extremities. It takes two or three days to complete its course, and when it reaches the feet and legs it has usually begun to disappear from the face. At the end of six or seven days from its first appearance, the eruption has entirely disappeared. This consists of little papules, somewhat resembling flea bites of a dark red colour. When the eruption is fully out, the cough at first dry and troublesome, generally becomes softer and less frequent. All ages are liable to attack, though infants at the breast are not so liable as those somewhat older. *Treatment*—It is not uncommonly a dangerous disease, though sometimes it has proved exceedingly fatal. Where danger occurs, it is from inflammation of the air passages, when the disease may become complicated with croup or in subjects predisposed to consumption the seeds of that disease may be developed. In general a simple diet and the maintenance of an equable temperature is all that is required, with, perhaps, the administration of gentle aperients and mild diaphoretics or expectorants. Sometimes the application of a mustard poultice to the chest is of advantage. After the disease has subsided the patient should receive nourishing and easily digested food and tonics, be kept warmly clad and not allowed to go out of doors too soon.

MEASURE⁴ (See APOTHECARIES' WEIGHTS AND MEASURES)

MEDICAL JURISPRUDENCE is that department of science in which medical knowledge is called in to the aid of legislation and consists in the application of the principles of medical science to the administration of justice and the preservation of the public health. It is usually divided into forensic medicine and medical police, the first comprising—(1) questions affecting the civil rights or social duties of individuals, (2) injuries to property, and (3) injuries to the person, the second, (1) questions affecting the preservation of individuals, (2) what relates to the health of men collected in towns. Under the head of questions affecting the civil or social rights of individuals, comes to be considered—(a) the development of the human frame, with the periods of growth, maturity, and decay; (b) duration of human life, (c) personal identity, (d) marriage, with the physical circumstance affecting its legality or which may justify divorce, (e) impotence and sterility, with the causes and marks of, (f)

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pregnancy, its signs and limits; (g) parturition, (h) monsters and hermaphrodites, (i) paternity and affiliation, (k) presumptions of survivorship, as when a mother and now-born infant are found dead together, it is often of importance to find out which survived the other, (l) mental alienation, and the means of distinguishing between real and affected cases of insanity, (m) the rights of the deaf and dumb, (n) maladies exempting from public duties, and (o) simulated diseases. Under injuries to property are included—(a) nuisances from manufacturers, &c., (b) arson, (c) forgery and falsification of documents, (d) coining of false money. Injuries against the person include—(a) defilement, (b) rape, (c) mutilation, (d) criminal abortion, (e) infanticide, (f) homicide, including drowning, hanging, strangling, &c., (g) death from starvation, (h) death from extremes of temperature, (i) wounds, (k) toxicology, comprising a knowledge of the various kinds of poisons, their action upon the human body, and the means of their detection. In the second department of the science or medical police, the circumstances affecting the health of individuals are—(1) cleanliness, (2) aliment, (3) the regulation of apothecaries shops, (4) clothing, (5) temperance, (6) exercise, (7) prostitution, (8) celibacy and marriage, (9) lactation and care of offspring, (10) effects of profession and trade upon health. The circumstances affecting the health of communities are—(a) climate, (b) the site of towns and habitations, (c) drains and sewers, (d) paving of streets and care of public ways, (e) cemetery, (f) hospitals, (g) schools, (h) prisons, (i) lazarettos and quarantine establishments, (k) punishments. These various subjects will be found treated at length in the works on "Medical Jurisprudence," by Drs Buck, Trail, Taylor, and others.

MEDICINE, *med e sin* [Lat *medicina*], is the art and science of curing disease. The various branches into which medicine is now divided are—*Anatomy*, or a knowledge of the structure of the human body, including *histology*, which treats of the minute structures of parts discernible only by the microscope, *Practical Anatomy*, which applies a knowledge of structure to a right performance of the operations of surgery, and *Pathological Anatomy* which points out the aberrations from the normal or healthy structure of the organs or tissues of the human body, *Physiology* or a knowledge of the vital actions, *Pathology*, comprising the nature, cause and cure of disease, *Necrology* which treats of the various kinds of diseases, and tries to arrange them systematically, *Surgery*, treating of such diseases and the modes of relieving them, *Læsions* and derangements by mechanics, *mechanical*. *Obstetrics* or *Midwifery*, dealing with the modes of facilitating delivery, and the dis-

Medulla Oblongata

cases of children *Materia Medica*, or the science of medicines, their nature, composition, and effect; *Therapy* or the preparation of medicines, *The practice*, the application and administration of every kind of remedy, *Hygiene*, treatment of the laws of health, *Diets*, dealing with the rules of diet, *Medical Jurisprudence* or the application of the sciences of medicine to the examination of law, *Clinical Medicine* or the instruction communicated at the bedside of the patient, *Psychology*, *Medical Psychology* or the nature and treatment of mental diseases (See ANATOMY, PHYSIOLOGY, PATHOLOGY, NOSOLOGY, SURGERY, MATERNAL MEDICINE, &c.) Intimately connected with medicine is the science of Natural Philosophy (Chemistry, Geology, Botany, Mineralogy, Meteurology, &c.)

Medulla Oblongata (See BRAIN)**Melaleuca** (See Myrtle)

Melasma [Gr. *megas* big] is a humor it is pain affecting principally one side of the head. It commonly proceeds from cold and is to be treated by warm fomentations and purgatives. Afterwards the system should be strengthened by tonics, nourishing diet, &c.

Mel (See Honey)

Melaleuca *melaleuca* [Gr. *melas* black, *leukos* white, because the trunk is black and the branch white], a gen. of the nat. ord. *Myrtaceae*. The species *M. minor* or *Leptophloeus* is a small tree of the Molucca Islands. Its leaves when allowed to stand so as to extract a decoction or fomentation and then distilled with water, yield a volatile oil of a liquid nature and a light green color, called *eucalyptus*. It was formerly much employed as a remedy in rheumatism without any success. It has been used internally as a diffusible stimulant against spasmodic, and diarrhoeal, and externally when mixed with olive oil, as a stimulant emollient. The spirit of eucalyptus (fluid extract of the oil to 43 fluid ounces of rectified spirit) is given in doses of $\frac{1}{2}$ to 1 fluid drachm.

Melissa, mel [Gr. *mela* a bee] a gen. of the nat. ord. *Labiatae* M. officinalis, common balm, possesses mild stimulant properties, and its decoction is used in aphrodisiac in fevers, as an emollient drink in nervous affections, and as an emmenagogue.

Mercio (See CUCUMBER)

Mesentery [Lat. *mesenteria*] is an epiploic substance lining or covering different parts of the body. They are distributed in all the membranes, and are distinguished as smooth lining cavities communicating with the external air; serous, lining cavities not communicating, cellular membrane or greater tissue fibrous membrane, &c. The membrane lining the thorax and enveloping the heart is called the *pneumogastric*, that lining the abdomen the *peritoneum*.

Mentha, men-tha [Lat. minta], a gen. of**Mercury.**

the nat. ord. *Labiate*. Several species are used in medicine and as sweet herbs for flavoring, &c. Two are official—namely, *M. viridis*, spearmint, and *M. piperita*, peppermint. They possess stimulant and carminative properties. The oil of both species is obtained by distillation in boiling from the fresh flowering plants. The water is made by adding $\frac{1}{2}$ fluid drachm of the oil to $\frac{1}{2}$ gallon of water, and distilling one gall. The essence of peppermint (a strong decoction of the oil to 4 fluid ounces of rectified spirit) is given in doses of 10 to 20 minims. The spirit (1 fluid ounce of the oil to 4 fluid ounces of rectified spirit), dose, 1 to 2 fluid drachms.

Mercurius, mer-ku'res [after the god], symbol Hg (hydrogenum) equivalent to spec. grav. 14.7. Fahr. 29.4 to 60° Fahr. 15.5. Mercury is one of the seven metals known to the ancients, and is with the exception of boron the only element fluid at ordinary temperatures. It is found in nature in the form of cinnabar or sulphide, in the clay, &c., and red sand-stone under the calcareous rocks. The most famous occurrences are at the oast Almaden, in Spain, Idria in Transylvania, and New Almaden in California. It is also found in large quantities in Australia, China, Japan, and at Huancavelica in Peru. Mercury is a curative in animal, man with gold and silver as in hidrosis and scabies, mercury or subcalom. The commonest form it forms a heavy mass, termed an oval. An iron bar of two part of zinc melted in 14 of mercury is used to cover a stably, it adheres to the iron. The first application medicines. Mercury is also a powder to wash it— $\frac{1}{2}$ oz. to 1 lb. of saltpetre. When pure, it is not soluble in water, but it dissolves in acid, & does not decompose after it is heated. Heated in a current of air to 100° to 80° it becomes gradually converted into the red oxide, strong nitric acid dissolves it readily, nitrate of mercury and dinitro of nitrogen being formed. Mercury forms two chlorides, the subchloride, calomel, HgCl, or protchloride, protchloride or protoxide, sublimate, HgCl. The two oxy compounds are often mentioned in old texts, such as the protchloride and bischloride of mercury respectively. Calomel is much used in medicine. The chloride or corrosive sublimate is an extremely powerful and acrid poison. It subdues white of eggs, with which it forms an insoluble compound. With oxygen it forms three oxchlorides. It is used in medicine in certain skin diseases. Mercury forms three iodides—the green, or subiodide, HgI, formed by fusing 278 grains of iodine with 1 ounce of mercury, the protiodide, HgI, made by precipitating a solution of corrosive sublimate with iodide of potas-

Mercury.

snum and an unimportant intermediate iodide. Mercury forms several *nitrates*. It will be only necessary to mention two—the subnitrate, $Hg_2O\cdot NO_3$, prepared by acting on excess of mercury with nitric acid in the cold, and the nitrate, $HgO\cdot NO_3$, prepared by dissolving mercury in excess of nitric acid by the aid of heat. Mercury forms two *oxides* the black, or suboxide, $Hg\cdot O$, and the red, or oxide, HgO , both of which form salts with acids. The suboxide is obtained by subliming finely levigated calomel with a solution of potash or soda, and washing the black precipitate with cold water. The red oxide may be made by exposing metallic mercury to a current of air at 70° or more readily by decomposing the nitrate by heat. There are several subslates of mercury, the most important of which is $HgO\cdot SO_4$, formed by heating 20 parts by weight of mercury with 7 fluid ounces of sulphuric acid in a porcelain vessel till only the white sulphur remains. Mercury is an excellent solvent in medicina as a cathartic and emetic. It promotes absorption, and reduces the amount of fibrin and coagulates the blood, and thus forms a valuable remedy in all cases of inflammation. It has a powerful effect in all violent fevers. When the system is saturated with it, it produces a sweat. In the preparation of medicinal preparations of mercury in the following—*Catopon* is the salt of mercury (sulphate of M., 20 ounces, and mercury by weight, 7 ounces) dissolved in warm distilled water, and a sufficiency of boiling distilled water to dilute to 20 grains; it is alterative, so to say, cathartic, &c, until Hg is sublimate (1 ounce) of sulphur (1 M.) and sulphuric acid (10 ounces) dissolved in water in powder, and 7 fluid drachms of castor oil, dose, 2 to 3 drams. *Yellow M. ointment* (so called) is the ointment of M. prepared (and therefore yellow) by mixing 10 fluid drachms of the oil of sodium dried and 7 ounces of black oxide of manganese (so fine powder) dose, 1 to 2 drams. The *Yellow M. ointment* consists of the perchloride of M. and chloride of ammonium dissolved in a pint of distilled water, dose, 3 to 2 fluid drachms. *Yellow mercurial lotion* (18 grains of the perchloride and 10 fluid drachms of solution of tin, mixed). *Red oxide of M.* (perchloride of M., 20 grains, and 10 fluid drachms of potassium carbonate, and boiling distilled water, 4 pints), dose, 1 to 2 grain. The ointment is formed of 16 grains of the red iodide of M., and 1 ounce of simple ointment, thoroughly mixed. *Green oint. of M.* (mercury by weight, 1 ounce, iodine, .78 grains, and rectified spirit a sufficiency), dose, 1 to 3 grains. *Red oxide of M.* (mercury by weight, 8 ounces, nitric acid, 4½ fluid ounces, and water, 2 fluid ounces); used

Mesmerism.

only to form the constituent of that name (2 grains of the red oxide in very fine powder, ½ ounce of yellow wax, and ½ ounce of oil of almonds, thoroughly mixed). *Ammomiated M.* (perchloride of M., 3 ounces, solution of ammonia, 4 fluid ounces, distilled water 3 pints) used in preparing the ointment (6 gr. Hg perchlorated M. thoroughly mixed with 1 ounce of simple ointment). *Acid solution of nitrate of M.* (mercury 4 ounces, nitric acid 5 fluid ounces, distilled water, 1 fluid ounce). *Ointment of nitrate of M.* (mercury by weight, 4 ounces, nitric acid, 10 fluid ounces, prepared lard, 15 ounces; and olive oil, 2 fluid ounces). *M. with chalk*—*M. with chalk* (mercury by weight 2 ounces, prepared chalk, 1 ounce, dose, 3 to 8 gr. *M. with chalk ointment* (1 lb. each of mercury & chalk prepared in 1 lb. each of prepared chalk, thoroughly mixed). *Ointment of M.* (oin m. 1 lb. 1 ounce, and solution of zinc in oil 1 lb. 1 ounce, and solution of zinc in oil 1 lb. 1 ounce). *M. with oil for external use*, 30 grains; linseed oil, slad oil, white, sublimed saltpeter, 10 grains, and lead plaster, 1 ounce. *M. with oil* (mercury 30 grains, and common oil 10 to 13 ounces, 1 liquorice root in strong powder, 3 grains) dose, 3 to 8 gr. *M. with oil* (mercerized) a term applied to parts connected with the mercerized, as the *cartilaginous*, *mesenteric*, *artery*, &c. (See *MESENTERY*).

Mesenteric [Gr. *meso* middle, and *enteron*, intestine] is a derivative of the prefix *meso-* or *membranous* relating the cavity of the abdomen. It is applied to the veins of the loops and vessels to support the intestines, and to afford safe lodgment to blood-vessels, &c, to the nerves &c. It consists of the 3 parts—the mesentery properly so called, connecting the small intestine, the meso colon, &c, to the colon, and the meso rectum to the rectum.

Mesmerism—*mesmerism* a term generally applied to the phenomenon known in France and called after the name of the physician Mesmer, who lived in the latter part of the eighteenth century. Up to the present day the phenomena of mesmerism have not been definitely accounted for, but originally it was supposed that an analogy really existed between the action of the animal magnetism and human energy. Animal magnetism—an incorrect but convenient phrase—may be described as a power which a stronger is supposed to be able to exert over a weaker person or a lethargic one, a disease whereof, through a more exertion of the will in some cases, but more generally by thus means accompanied by stroking with the hands, the former throwing the latter into a stupor. During this state certain peculiar sensations are experienced, which arise from no corporeal excitement and may have good effects upon the health of the patient. The progressive sensations which characterize the mes-

Metacarpus.

meric state have been thus classified by Klugo, a German philosopher - the first degree called *waking* presents no remarkable phenomena. The intellect and the senses still retain their usual powers and susceptibilities. In the second degree called *half sleep* or the *imperfect dream*, most of the senses still remain in a state of activity, that of vision only being impeded the eye with drawing itself gradually from the power of the will. In the third degree, called the *magnetic* or *mesmeric sleep*, the senses refuse to perform their respective functions, and the patient is unconscious. In the fourth degree (called *simple somnambulism*) or the *perfect dream*, the patient is said to "will", as it were, within himself, and his consciousness returns. In the fifth degree called *lucidity* or *lucid vision*, the patient is placed in what is called the state of *self initiation*. In France, and in this country generally, this state is called *clair-voyance* in Germany *Hellenesken*. When in this state he is said to have a clear knowledge of his own internal mental and bodily state, is enabled to calculate with accuracy the phenomena of diseases which will naturally and inevitably occur, and to determine what are then most appropriate and effectual remedies. In the sixth degree called *universal lucidity* the *lucid vision*, possessed in the former degree, extends to all objects near and distant in space and time. Many persons, however, who practise mesmerism are sceptical with regard to the existence of the two last degrees, although such cases are recorded by the best authorities on the subject. M. Reichenbach a distinguished German chemist, gave a more scientific aspect to the phenomena of animal magnetism by stating that he had discovered a new force in nature, called the *Od force* or *Odylic*. He regarded this as a peculiar force in nature the presence of which could only be detected by persons of a highly susceptible nature. Electro-miology is only another form which the public exhibition of animal magnetism has assumed. Sleep is produced by making persons gaze for a certain length of time on a piece of money which is placed in the hand. In susceptible individuals this produces a kind of cataleptic sleep, in which they exhibit all the phenomena of the mesmeric state.

METACARPUS (See HAND).

METAMERISM, *me-ta'-mer-izm* [Gr. *metathesis*, I transfer], is the sudden transference of a disease of action from one part of the body to another, as when a simultaneous eruption is suddenly checked by exposure to cold, and the disease attacks a deep seated part, or, in gout, where the disease suddenly shifts from the foot to the stomach, or some other internal part.

MYPARESIS (See FOOT).

METHYLATED ALCOHOL, or METHYLATED SPIRITS, *meth-e-lit-ed*, spirits of wine to

Milk.

which have been added certain portions of shell lac and methylated alcohol, or wood spirit, for rendering the mixture unpotable. This mixture is allowed by the government to be sold without excise duty, for the purposes of manufacture. Numerous instances have, however, occurred in which the methylated spirit has been "doctored" and sold for the purposes of dram drinking.

MILAYMA (See MILARIA).

MIDWIFERY (See OBSTETRICS).

MILARIA, or MILIAKY FEVER [Lat. *milia*, millet], a disease characterized by small vesicles upon the skin resembling millet-seed and attended by fever. The eruption is preceded by a sense of prickling, and small red pimples appear, which in two or three days become white, devannuate, and are succeeded by other pimples. The perspiration is of a strong and peculiar smell. The treatment consists in supporting the strength with light and nourishing diet and tonics, keeping the bowels open by cooling laxatives, and soothing the irritation of the skin by sponging with warm water containing a little soda.

MILK [Lat. *melus*], an opaque whitish secretion peculiar to the females of the class Mammalia or those animals which feed their young from their teats. Milk differs as procured from various animals, but its general characteristics are the same in all. The most familiar variety is that of the cow. Milk may be looked upon as a serum fluid, holding in suspension minute bits of globules, composed of casein or fatty matter. When examined microscopically, these globules are found to have a diameter of 0.003 inch, and to disappear on the addition of a solution of potash - (*Raynal*). When milk is allowed to stand for some time, it undergoes spontaneous changes, a thick yellowish substance, called *curd*, collects on the surface and the milk beneath becomes thinner and of a pale bluish colour. Butter, butter-milk, and cream cheese are made from cream. Milk from which butter has been taken also undergoes spontaneous changes, it becomes much sourer and congeals into a mass of the consistency of jelly. The fermentation of this coagulated mass is hastened by heat, and when certain substances are added it very rapidly takes place. Thus, acids and spouts of wine curdle it as it is called, but the most powerful coagulator in use is a decoction from the stomach of animals especially that of the calf, called *rennet*. After being thus treated, if the whole is put into a bag and squeezed, a thin fluid is forced out, and a tough whitish matter is left behind, the latter substance is called *curd*, and the former *whey*. The specific gravity of milk is about 1.033 , that of cream, 1.204 . The composition of milk varies considerably, but the following may be taken as an average. —

Milk, Sugar of.

Woman Cow Goat Ass Bitch

Water.....	86.6	87.4	82.0	90.5	66.3
Butter	2.6	4.0	4.5	7.4	14.8
Milk, sugar, and soluble salts	4.9	5.0	4.5	6.4	2.9
Casein and insoluble salts	3.9	3.6	9.0	1.7	16.0

The milk of cows and other animals is very much used as food, and is very important as a constituent of diet, even among adults. It is also valuable as a food for invalids, especially those who have a consumptive tendency. In some cases of poisoning by metallic salts, such as corrosive sublimate, sulphate of copper, &c., milk is used as an antidote.

MILK, SUGAR OF. (See SACCHARUM LACTIS.)

MINERAL WATERS, min'-ə-rəlz.—The different kinds of mineral water may be arranged in six divisions: namely, Acidulous, Alkaline, Chalybeate, Sulphureous, Saline, and Silicious springs. 1. *Acidulous springs*, of which those of Seltzer, Spa, Pyrmont, and Carlsbad are the best known, generally owe their acidity to the presence of free carbonic acid. When poured from one vessel into another, they sparkle, in consequence of the escape of carbonic acid gas. 2. *Alkaline waters*, or those which contain a free or carbonated alkali, either in their natural state or when concentrated by evaporation. These springs are rare; but there are some at St. Michael's, in the Azores. The water contains carbonate of soda and carbonic acid, and is almost entirely free from earthy substances. 3. *Chalybeate waters*, which are characterized by a strong, styptic, inky taste, and by producing a black colour when mixed with an infusion of gall-nuts. The iron contained in these waters is most frequently in the form of protocarbonate held in solution by free carbonic acid. On exposure to the air, the protodoxo is oxidized, and the hydrated peroxide descends, leaving the reddish-yellow deposit ordinarily observed in the neighbourhood of chalybeate springs. Waters of this kind are not uncommon. The most noted in this country are those of Tunbridge, Cheltenham, and Brighton. 4. *Sulphureous waters* contain hydrosulphuric acid, and may easily be recognized by their odour. They also cause a brown precipitate when mixed with a salt of lead or silver. The springs of Aix-la-Chapelle, Harrogate, and Moffat afford examples of sulphureous waters. 5. *Saline springs* derive their character from saline compounds held in solution. The salts which are most frequently contained in these waters are the sulphates and carbonates of lime, magnesia, and soda, and the chlorides of calcium, magnesium, and sodium. In a few, potash is found; and Berzelius discovered lithia in the spring of Carlsbad. Among instances of saline springs may be mentioned those of Epsom, Cheltenham, Bath, Bristol, Badges, Buxton, Pit-

Monandria.

caithly, and Teoplitz. Sea-water may be regarded as one of the saline mineral waters.

6. *Silicious waters* are very rare, and in those hitherto discovered, the silicia appears to have been dissolved by means of soda. The most remarkable of these are the boiling springs of the Geyser and Rykum, in Iceland. The term mineral waters is sometimes applied to those springs which have no claim to repute except for their extreme purity; such as those of Malvern and Holywell.

MINIM [Lat. *minimūm*, the least] is the smallest recognized measure of capacity, being the 60th part of a fluid drachm. It does not weigh exactly a grain, as the fluid drachm weighs only 54.7 grains. It takes the place of that very variable measure, a drop, and may be said to correspond to a drop of distilled water.

MINT. (See MENTHA.)

MINTLETOE. (See VISCUM.)

MIXTURE. (See MIXTURE.)

MITRAL VALVE. (See HEART.)

MIXTURE [Lat. *mixture*], in Pharmacy, is a term applied to a fluid composed of two or more ingredients. Mixtures are of various kinds, and are extensively used in medicine, as chalk mixture, camphor mixture, gentian mixture, &c. (see CHALK, CAMPHOR, GENTIAN, &c.)

MOLE [Lat. *mole*], a mark on the skin, usually brown, and sometimes covered with hair. Moles are usually present from birth, and though sometimes unseemly, they are better left alone, as when irritated they are apt to occasion greater mischief.

MOLECULE, mo'-lē-küle [Fr.], a term used in chemistry to denote the smallest portion of any chemical substance that can exist alone; an atom being the smallest particle of an element that can exist in a compound body as a mass indivisible by chemical forces. Molecular attraction, or molecular force, is used to denote the attraction or force by which molecules are drawn or held together.

MONARDICA is the name of a genus of the nat. ord. Cucurbitaceæ. *M. alterium* is the squirting cucumber, which by some is made *Educa officinarum*. It is a perennial native of Greece and the south of Europe, flowering in June and July. The fruit is gathered for medicinal use in September, before it is quite ripe. The fruit is cut lengthwise, and the juice lightly pressed out. It is then strained through a hair sieve and set aside to deposit. Carefully pour off the supernatant liquor, pour the sediment on a linen litter and dry it on porous tiles, with a gentle heat. This is *Elettaria*, a powerful hydrogogue cathartic, acting chiefly on the intestinal excretions. It is useful in producing copious watery discharge in dropsy. Dose, $\frac{1}{2}$ to $\frac{1}{4}$ grain.

MONANDRIA [Gr. *monos*, alone; and *andros*, a husband] the name of a class of plants in

Monkshood.

the sexual system of Linaria, consisting of plants with hermaphrodite flowers having only one stamen (see Botany).

JONESWOOD (See ACONITUM)

MONOMANIA (See **INSANITY**)

[*C. monogyno*, *kutuldon*, a corydalis] one of the two great classes in which the plantaginaceous or flowering plants are divided. It agrees with the *Ind* side of some botanists, and includes the *Bulbenae* and *Dicotyledones* of Lindley. (See BOLIVIA.)

Monochysia [*Gr. μόνος and χύσις, woman or wife*] the name of a class of plants of the *Scrophulariaceae* section of *Lamiaceae* characterized by having their naphthoquinone flowers with only one style.

VONTE *non-ster* [Lit. man from] is applied to any creature who forms the *veto* in some remarkable way in the usual formation of its kind (See DICTOR MUNTA.)

Most common, and the most abundant of fungi at least in the glacial drift is a small, pale-colored, branching, fruiting body, which is easily overlooked. In Lancashire it is commonly called a dry stalk, being thus named from the circumstance. It is found in great numbers in places where trees have been burned.

Moirs (See **MORTMEL**)

Moringa, *moringa*, the typical genus of the dicotyledonous order of Moringaceae native of India and Africa. The root of *M. pteropoda* resembles that of horseradish in taste and odour, and has been used as a stimulant and rubefacient. A drop of gum resin during tracheitis will stop the bark when wounded. It can be found in this country, and will be used as described or I am.

MORPHIA, morfī-^s-ē [from Gr. *Morphē* the
gen. of *bleps*] is the most important of the
opium alkaloids. (See OPIUM.)

MORHIA OILUM (See Cod Liver Oil)

Monks' Hill—The first visit to
Dinell numbered twelve of Morrison's ap. II
No. 2, and found them to be composed of
masses of resin of some, 47, 113m, 114,
camboge, 4 grains powdered coloquintid, 4
gutta gum, and 6g. 42 unguentum of turp-
MORTALITY, BILIS OF (See BILIS OF
MORTALITY)

MORTIFICATION, *mortification* [Lat. *mors*, death and *ficio*, I make], used to denote the death of any tissue (see *TISSUE*)

don'ts, mor' n' (or moron, a mulberry). The Mulberry, the typical fruit of the 2nd class of Migræs. The fruit of *M. nigra* is our common mulberry. The juice of the ripe fruit (mornierra) is officinal, being used in the preparation of the syrup of mulberries (one pint, 2 fluid drachms 2 pounds, rectified spirit, 2 fluid ounces). It is refrigerant and slightly laxative. Dove, 2 fluid drachms. The leaves of this species as well as those of *M. v. alba*, white mulberry, are

Mucus.

of other, are in common use as the staple food of silkworms.

Moschus (See Mys.)

Moss, Leibniz (See CEPTRALIA)

Mouth, *mouth* [$\text{S} \text{ir } \text{m} \text{uth}$], the aperture in the head of an animal by which he takes his voice and receives his food. In the human species the mouth consists of the lips, the gums, the muscles of the cheeks, the palate, the salivary glands, the uvula, and the tongue.

Moya, *moy si*, a name given to a soft wavy substance made in Japan from the leaves of the *Aster*, *A. hirsutus*, or *A. hispidus*, and wort. It is dried in a certain way by boiling it until one of the skin and then heating broiling. On breaking down to the point in which it rests, it makes a soot which is kept upon it in nests. It is principally used in case of soreness or ulceration.

Mucilage, mucil, mucus [Fr.] a term applied to a substance which will be liquefied by heat or extracted by maceration in water or alcohol when they are infused in it, and then subjected to pressure in a known quantity. When the liquid is thus extracted, the residue resembles gelatin. Several kinds of mucilage are employed in medicine, as M. of *gum acacia*, M. of *aloe*, &c.

MICROS MUSCULARIS *mu* *mus* [*mus*] is the muscle in any substance which furnishes the interval between the articular cavities of the body which are exposed to contact with the air, or by which force is sometimes used to catch into the body or draw it from it. These muscles are so soft & pliable, that they are easily strained. They are usually situated in the respiratory and digestive organs, and in the parts where they present some slight modifications, adapted for special functions. The surface is covered over by a skin, thin & pliant, which protects it in the action of the air and of foreign bodies. (See MICROS)

ULLUVA, nu lu nü [Ulluva quaca] is the
Balsam wood or one species, a gen of
propilium acutum Legum novae. The bark cover-
ing the trunk of the species *M. pruriens*
and *M. l. l.* is used in a mechanism of
the balsam under the name of *caucho* or
cotch. The pods being dipped into benzene
or honey have the hairs scraped off, until
the mass is thin, and it is then

Mucus [*Lat.* *mucus*] is a thick & viscid substance, excreted by the various mucous membranes of the body. The principal office is to protect the mucous surfaces from injury by the contact of foreign substances, and to lubricate the several passages. In certain parts it has special functions, as that of the nose, which is favourable to smell, that of the stomach and intestines, aiding digestion. Its properties are variously altered by disease, becoming acid, mixed with pus, or otherwise changed.

Mudar Bark.

MUDAR BARK (See CALOBROPSIS)

MULBERRY (See MORUS)

MULLEIN (See VERBASCUM)

MUMPS, *mumps* [Ang Fr. *Lat cynanche parotidea, parotitis*], is an inflammation of the parotid and submaxillary glands of a contagious or epidemic origin. It is generally preceded and accompanied by a moderate fever, and commences with a feeling of pain and tension beneath the ear, a swelling forms, and the motion of the jaw becomes painful. It usually attains its height in four days and four days more may occur in its decline. It is naturally to quench the thirst, beyond the administration of a laxative and protection from cold, with the application of poultices or other warm substances to the part, or, in severe cases of leeches.

MURATIC ACID (W. HYDROCHLORIC ACID)

It is *mus* [*Lat. muscle*] is a term applied to the fibrous contractile tissue forming the flesh of men and animals by means of which the many highly complicated voluntary and involuntary motions of the body are performed. The extra tissue is of two kinds distinguishable by structure, peculiarities and mode of action; the one consisting in the muscles of the heart, which consist of single smooth filament (except in the case of the heart), the other consists in the muscles of animal life and insect and consisting of compound and apparently striped fibres, or filaments enclosing fibril. The muscles of organic life or animal life consist of fibres of irregular elongated spindle-shaped fibro-cells, which are usually from 1¹/₂ to 2¹/₂ mm. in length, very clean granular and flexible. These fibres are collected in fascicles and form the principal contractile parts of the digestive canal, urinary bladder, gall bladder, arteries &c. The muscles of animal life or simple muscle are composed of fleshy bundles and consist of fine cellular tissue by which each is once connected with and isolated from those adjacent to it. Each bundle is again divided into smaller ones usually encircled and similarly divisible through an uneven number of glandular till just beyond the reach of the naked eye one arrives at the primitive fascicles, or the muscular fibres properly so called. These consist of tubes of delicate structures membrane, — the *endothelium*, of Bowman varying in breadth from 1¹/₂ mm., and enclosing a number of filaments. They are of a pale yellow colour, and divided by striae which pass transversely round them. The primitive fibres, of which each fasciculus contains several hundred, are the proper contractile tissue of the muscle, are cylindrical but somewhat flattened in form, and about 1¹/₂ mm. of an inch in greatest thickness. The peculiar property of muscular tissue, its contractility, although commonly brought into action by

Myristica.

the nervous system, appears to be inherent in the muscular tissue, and not derived by it from the nerves, for it may be interrupted in a muscle after being isolated from the influence of the nervous system by division of the nerve supplying it. (See INNervation.) Muscular contraction is generally believed to be effected by an approximation of the constitutive parts of the fibres, which without any alteration in their central direction, become closer, flatter, and wider. It is a uniform simultaneous, and steady shortening of each fibre and its contents. Muscles are usually styled voluntary or involuntary, according as they are, or are not, subject to the influence of the will, but this division is not strictly accurate, and is of little value in a scientific point of view. They are for the most part arranged in pairs, flexors and extensors, abductors, and adductors, supinators and pronators, &c. Muscles are attached to bones by means of tendons, which are white and shining, round like the tendons of cords, and very strong. The fixed point of a muscle is called its origin, the movable point its insertion. Muscular fibres especially those of animal life, are contractile in a state of rest contraction, as is evident from the fact that with action of certain muscles it is possible to pull the antagonist muscle always draw it towards them. There are in the human body no fewer than 527 distinct muscles of which 60 are in pairs, and single on the median line. Of these there are 7 in the head and neck, 42 in the neck, 7 in the thorax, 3 in the abdomen, 76 in the pelvis, 30 in the upper extremities, and 32 in the lower. Yet with all this combination, however, everything is in perfect balance.

Muskrat (See AQUIRIS).

Musk, *mus* [Latin *musca*], a small secretion found in the proprial follicles of the muscus moschatus or musk deer native of Thibet and other parts of Central Asia. It is used in medicine and when taken in the dose of a few grains tones the energy of the digestive organs, and soon after its stimulus the powers of the whole animal system. It increases the action of the heart and arteries, is antispasmodic, and in large doses narcotic. Dose, from 5 to 10 grains, in pill or extract. It has been found of service in spasmodic asthma, hysteric cough, inflammatory, tetanus, epilepsy, hysteria, &c.

MUSTARD (See SALSIS).

MUSCLES [Gr. *mu* = muscle, and *nos*, a muscle], is a description of the muscles. *Muscula* [Gr. *mu*, contract, and *os*, the eye] is a term used to denote unblighted leaves.

MYRISTIC, *myr-i-stik*, that is, pungent of the oil of Myristica. The most important species is *M. myristica* or officinalis, the nutmeg tree is a native of the Mal-

Myrospurum

Inca Islands, but is now cultivated in many tropical regions. The well known species *nutans* and *male* are derived from this species. They are both used in medicine as stimulants, carminatives, and flavouring agents. Nutmegs, when distilled with water, yield a volatile oil called *oleum* or *essential oil of nutmeg*. The official oil of nutmeg is distilled in Prussia, foreign oil being regarded as inferior, and given in doses of 2 to 6 minims on sugar. The spirit (1 part of the oil to 49 of rectified spirit) is given in doses of 30 to 60 minims.

MYROSPURUM, or MYSOXYLON, *au ro per-*
mum [Gr. *μύρον*, myrrh; *σπέρμα*, seed] a genus of balsamiferous trees belonging to the nat ord *Leguminosae*. The species are natives of South America and the West Indies. *M. tolufernum* is the source of balsam in Tolu, and *M. Peruviana* that of balsam of Peru. They are largely used in medicine for their stimulant and expectorant properties in chronic catarrh, asthma, &c. Dose of the former is 10 to 20 grains, of the latter 10 to 15 minims. Oil of the fracture of *M. lu* (1 oz. to 1 pint of rectified spirit), the dose is from 20 to 40 minims.

MYRRH, *myrra* [Arab. *mirr*; Lat. *myrrha*] a fragrant, bitter aromatic gum resin which occurs in tears of different sizes, which are reddish brown semi-transparent brittle, of a shining fracture and have a glistening appearance under the microscope. It is obtained from the *Balsamodendron myrrhae* by means of incisions and consists of resin and gum in proportions stated by Pellegrini as 34 of the former and 66 of the latter. It is mucilaginous, and expectorant. It possesses also the power of diminishing profuse discharge from mucous membranes. Dose 10 to 30 grains. The tincture (1 part of myrrh, in coarse powder, to 3 parts of rectified spirit) is given in doses of 1 to 1 drachm. It is much used as a gargle diluted with water, or as an astrigent infusion.

N.

N — In prescriptions, this letter is a contraction for *numero*, in number. Thus *1*½* Hydarg N xy* means mercurial pill, 1*½* in number.

NAILS (See Moir.)

Nails are the appendages to the fingers and toes of humans which correspond with the claws and hoofs of other animals. Under the microscope a portion of newly formed nail is found to consist almost entirely of nucleated cells, which are of exactly the same character as those found in the lower layers of epidermal tissue. No distinct structure can be observed as the nail grows older, but when immersed in a weak solution of caustic potash or soda the cells become visible. The nails of a human

Narcotics.

being are produced from a fold in the true skin, which has a highly vascular surface, furnished with longitudinal elevated ridges, to which blood vessels are copiously distributed, and between which the soft inner layer of the nail drops down. The growth of the nail is caused by additions to its base; but as it moves, it also receives additional matter from the skin, on which it rests.

NAILS, IN GROWING ON THE FINGER, is a painful condition that occasionally occurs, particularly with the great toes, in consequence of tight or ill-fitting boots. In order to cure, the nail should be well soaked in warm water, and the side scraped very thin. A small pad of cotton wool should also be carefully inserted under the edge of the nail, and the foot rested as much as possible for a few days. Should this treatment fail, it will be necessary to remove a portion of the nail, an operation which is very painful, and is best done under chloroform.

NARCOTIC, *nar* *kot* [Gr. *narke*, stupor], medicines which in small or moderate doses produce stupor or sleep, and which is generally preceded by temporary excitement. The stimulating power of most narcotics is manifested principally when they are given in small doses, while a full dose generally produces the narcotic effect at once without any apparent stimulation preceding it. On-which skill and experience are required in the administration of narcotics, both in regards to the cases in which they are to be prescribed and the persons to whom they are to be given. Narcotics are employed (1) to produce sleep, (2) to allay pain or spasm, (3) to arrest inordinate secretion, (4) to control inflammatory action or irritation. A full dose of a narcotic introduced into the stomach will if the stomach be empty, destroy the desire for food while if it contain food the digestive process is suspended or rendered slower. Their continued or frequent use is therefore injurious to the nutrition of the body, as instance in the persons of opium eaters. The general action of narcotics is modified by a great variety of circumstances such as the quantity prescribed, the frequency of repetition, also the force of habit, climate, or season, and above all by idiosyncrasy. The amount of action is also largely determined by the age of the person taking the narcotic. Young children bear narcotics badly. The amount of the dose should be determined chiefly by the effect produced, and should be small at first, particularly in debilitated persons. To this class of medicines belong opium, hemlock, henbane, belladonna, aconite, stramonium, camphor, digITALIS, tobacco, alcohol ether, nux vomica, leopard's-bane, hop, strong-scented lettuce, and a variety of other substances. When one narcotic fails, another will frequently be found to produce the desired effect. (See SEDATIVE, ANALGÉSIE, ANESTHETIC.)

Narcotine.

NARCOTINE, *när-kō-tēn'*, one of the alkaloids of opium. (See OPIUM.)

NASTURTIUM, *nästür'-shüm* [Lat.], a gen. of the nat. ord. *Cruceiferae*. *N. officinale* is the common *Watercress*, one of the most wholesome of our popular salad vegetables. It has remarkable nutritive properties, and is interesting in a chemical point of view from containing iodine.

* **NATSEA** [Gr. *naus*, a ship], the sensation of sickness with an inclination to vomit, so called from its resemblance to the feeling occasioned by a ship at sea. Nausea usually proceeds from a disordered state of the stomach, but it may also arise from other causes, as mental emotion, injuries of the brain, &c. It is to be removed by curing the disorder to which it is owing. It will, however, frequently be alleviated, or even removed, by effervescing draughts.

NAVEL is the centre of the lower part of the abdomen, being the point where the umbilical cord of the fetus is cut. When the child is born the navel string has to be severed and tied and in a few days it sloughs and comes away, leaving the indentation in the belly which is commonly called the navel.

NECK, neck [Sax. *necc*] is that part of the body which connects the head with the trunk. It is principally made up of the cervical vertebrae and the numerous muscles which cover them, and also concerned in their different movements and those of the head and shoulders. The pharynx and oesophagus lie in contact with the front of the vertebral column, and the larynx and trachea in front of these. The large blood vessels of the head pass through the neck on the front of the spine, and some important nerves take nearly the same course. These several organs connected together, interlocked by cellular substance and surrounded by integuments compose the neck.

Necrosis, *né-kro-sis* [Gr. *nekros*] is used as synonymous with mortification or gangrene, but it is more commonly used in surgery to denote the death or mortification of a part or the whole of a bone. Necrosis differs from caries of a bone, inasmuch as in the latter case the vitality of the bone is only impaired, not destroyed, as in the former, in the same way as ulceration of the soft parts differs from gangrene. Necrosis is found in either sex, and at all periods of life, and may be occasioned either by external causes, as fractures, contusions, &c., or by internal or constitutional causes, as a debilitated or deranged habit of body. When a portion of a bone becomes dead, it is regarded as an extraneous substance, and its removal from the part, either by the action of absorbents or by a surgical operation, is absolutely necessary.

NECTANDRA, *nek-tän'drā*, a gen. of the nat. ord. *Lamaceae*. The species *N. Radicans* is the *bitter* or *beeberry* tree, a plant of con-

Nerves.

considerable importance. The bark has been used of late years as a substitute for the cinchona barks in medicine. Its tonic, aperient, and litharge properties are due to the presence of a peculiar alkaloid, called *beberrine* or *bebberine* which may be employed by itself, or in the form of a sulphate as a substitute for quinine. Dose, 2 to 10 grains.

NEKRYTIC, *nék'rit-ik*, a word adopted from the Greek, signifying a drink calculated to banish the remembrance of grief and enlivon the spirits. It is now applied to a particular preparation of opium.

NEPHRITIS (See KIDNEY, Disease of the.)

NERVE, and **NERVOUS SYSTEM** —The nervous system consists that portion of the organization of man by which the mind is brought into connection with the physical world. It consists of two portions or constituent systems, —the *cerebro-spinal*, and the *syringeal* or *ganglionic*. The cerebro-spinal system includes the brain and spinal cord, with the nerves proceeding from them and is denominated by Bichat the nervous system of animal life. It includes those viscous organs in and through which are performed the several functions with which the mind is made immediately connected as those relating to nutrition and respiration. The sympathetic or ganglionic system, named by Bichat the nervous system of organic life, consists of a chain of ganglia extending from the cranium to the pelvis along each side of the vertebral column, and from which nerves with ganglia proceed to the viscera in the thoracic, abdominal and pelvic cavities (See GANGLION). The several organs which constitute the nervous system are composed of two distinct substances which differ from each other in density, colour, minute structure, and chemical composition. They are the *nerve* and *fibrous* matter, the former being also called the grey or cerebriform substance, the latter the white or medullary. The former is distinguished by its dark reddish-grey colour and soft consistency, and is usually collected in masses and mingled with fibrous structure, as in the brain, spinal cord, and the several ganglia. These masses are termed nervous centres, being supposed to be centres in which nervous force is generated or propagated. The fibrous nerve substance besides entering into the composition of the nervous centres forms along the nerves or cords of communication which connect the various nervous centres with the different tissues and organs. The voluntary nervous substance is composed as its name implies, of vessels or corpuscles, commonly called nerve or ganglion corpuscles, containing nuclei and nucleoli, the vessels being imbedded in a sort of matrix of granular substance. Each vessel consists of an ex-

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ceedingly delicate membranous wall enclosing a finely granular material, part of which is occasionally of a coarser kind, and of a reddish or yellowish-brown colour. The nucleus is vesicular, and much smaller than the vesicle. The nucleolus, which is enclosed within the nucleus, is also vesicular, of minute size, and peculiarly clear and brilliant. The nerve vesicles vary in shape and size, some are small, spherical, or ovoidal, with an uninterrupted outline, others are more or less angular or irregular in form, or have one or more long processes issuing from them. The fibrous nervous matter consists of two distinct kinds of nerve fibres which are distinguished as the tubular or white fibre and the gelatinous or grey fibre. In most nerves these two kinds are intermingled, the tubular fibres being more numerous in the nerves of the cerebro-spinal system, the gelatinous predominating in the nerves of the sympathetic system. The nerve fibres vary in size, being largest within the trunk and branches of the nerves, where they measure from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch, and becoming gradually smaller as they approach the brain and spinal cord, and usually also, in the tissues in which they are distributed. In the grey matter of the brain and spinal cord they seldom measure more than $\frac{1}{32}$ to $\frac{1}{16}$ of an inch. The tubular fibres in a perfectly fresh state, present the appearance of simple membranous tubes, perfectly cylindrical, and contain the proper nerve substance. This is a transparent oil-like and apparently homogeneous material but shortly after death, it undergoes a change, and has the appearance of being composed of two distinct materials, the internal or central part occupying the axis of the tube, becoming greyish, while the outer or cortical portion becomes opaque, and finely granular or granulous, as if from a kind of concretion. The gelatinous fibres constitute the main part of the trunk and branches of the sympathetic nerves and are intermingled in various proportions in the cerebro-spinal nerves. They are flattened soft and homogeneous in appearance and, when collected together in great numbers, they present a yellowish grey colour. They differ from the tubular fibres in being only one half or one third of their size, in the absence of the rounded form, their apparently uniform texture, and their yellowish-grey colour. The nerves which proceed from the cerebro-spinal axis, or the nerves of animal life, are distributed to the organs of the sense, the skin, and the muscles, and the sympathetic or ganglionic nerves are distributed chiefly to the viscera and blood vessels, and are termed the nerves of organic life. The cerebro-spinal nerves consist almost exclusively of the tubular nerve fibres, the gelatinous fibres existing only in very small proportion. Each cerebro-spinal nerve consists

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of numerous nerve-fibres collected together and enclosed in a membranous sheath. A small bundle of primitive fibres so enclosed is called a *fasciculus*, and if the nerve is of small size, it may consist only of a single fasciculus, but if large, the fasciculi are collected together into larger bundles or fasciculi, and are bound together in a common membranous investment termed the sheath. Nerves, in their course, subdivide into branches, and these frequently communicate with the branches of a neighbouring nerve, but in these communications the nerve fibres never coalesce, but merely pass into the sheath of the adjacent nerve, become intermixed with the nerve fibres, and again pass on to become blended with the nerve fibres in some adjoining fasciculus. Every nerve fibre in its course proceeds uninterruptedly from its origin at a nervous centre to its destination, and, however long its course, there is no branching or anastomosis, or union with the substance of any other fibres. The communications which take place between two or more nerves form what is called a *plexus*, in which the component nerves divide, then join and again subdivide in such a complex manner that the individual fasciculi become most intricately interlaced. As the small bundles of nerve fibres approach their final and minute distribution in the several tissues, they commonly form delicate "terminal plexuses." The primitive fibres appear to terminate in various ways, as in loops, in pictures, by branching, or by free end. The central termination of a nerve-fibre is that in connection with a nerve centre the peripheral termination, that in connection with the different organs and tissues. The sympathetic nerves consist of tubular and gelatinous fibres intermixed with a varying proportion of filaments of areolar tissue, and enclosed in a sheath of fibro areolar tissue. The tubular fibres are for the most part smaller than those composing the cerebro-spinal nerves, and their double contour is less distinct. The nerve-fibres both of the cerebro-spinal and sympathetic system convey impressions of a twofold kind—the one the impressions made upon their peripheral extremities or parts of their course to the nervous centres, the other the impressions from the brain and other nervous centres to the parts to which the nerves are distributed. For this twofold office two distinct sets of nerve fibres are provided—the *sensory*, called also the *centripetal*, or *afferent* nerves, which convey impressions from the periphery to the centre, and the *motor*, *centrifugal*, or *efferent* nerves, which transmit central impulses to the extremities. But, with this difference in function, there is no apparent difference in the structure of the nerve-fibres by which it might be explained. Nerve-fibres appear to possess no power of generating force in themselves, or of ci-

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ginating impulses to action; but they possess a certain *velocity* of conducting impressions, which, however, is never manifested till some stimulus is applied. This property of nerves is called excitability, irritability, or nervous force, and one of its peculiarities is the rapidity with which it travels along the nerve-fibres. In many respects it resembles electricity, but the analogy between the two does not amount to identity. All stimuli, internal or external, chemical, mechanical, or electrical, when applied to sensitive nerves, produce sensations; and when applied to motor nerves, excite contractions. There are certain kinds of nerves, however, the irritation of which produces effects that are entirely peculiar to themselves; thus, irritation of the optic nerves causes the sensation of light; of the auditory nerve, of sound; and of the olfactory or gustatory nerves, of smell and taste. It is a remarkable fact that, whatever part of a sensitive nerve be irritated, whether it be the centre, middle, or extremity, the same sensation will be produced. (See BRAIN, SPINAL CORD, GANGLION.) See "Quain's Anatomy," by Sharpey; Gray's "Anatomy;" Kirke's "Physiology;" Carpenter's "Human Physiology;" Todd's "Cyclopedia of Anatomy and Physiology;" Brown-Squard's "Physiology of the Nervous System."

Nervous Diseases, *nervosus*.—Of the numerous disorders to which the human frame is liable, there are, perhaps, none which exert so extensive an influence, and are at the same time so little understood, as the whole class of nervous diseases. The nervous system is the presiding and governing power of the whole animal machine. The sufferings and disorders to which it is liable are so varied in their sources, so uncertain in their nature, degree, and combination, are intended for the most part with such a variety of symptoms, that they are not only difficult to describe when observed, but are even more so to recognize when they occur. Connecting as does this system the mental with the physical, the diseases affecting it are not confined to the body, but invade the province of the mind itself. Nervous diseases are properly divided into structural and functional; the former arising from some morbid change or lesion in the nerve structures, the latter including those in which there is no morbid change or lesion to account for the symptoms. Structural diseases may be divided into—*1*, those of the brain and spinal cord, and their coverings or membranes; and *2*, diseases of the nerves. The brain and spinal cord are subject to diseases affecting their membranes, their substance, and their blood-vessels. (See BRAIN, DISEASES OF THE.) Diseases of the nerves themselves are not numerous. They may arise from inflammation of the delicate fibrous sheath

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which envelops the nerves, from the development of tumours near the origin or along the course, or amid the ramifications of the nerves; or from the bulbous expansion of the extremities of divided nerves, occurring after amputation, and causing painful stumps. The functional diseases of the nervous system manifest themselves by irregular, depressed, or exalted conditions of the processes and peculiar functions of the system; viz., sensation or feeling, and motion. They may be enumerated as follows:—*1*. The numerous varieties of neuralgia, which are independent of disease of the nerves or their centres (see NEURALGIA). *2*. The various forms of insanity and general paralysis, where no morbid change occurs in the brain to account for the symptoms. *3*. The various exhibitions of mental and moral perversity, constituting the diseases known as hysteria, convulsions, palsy, or palsy of sensation and motion, &c. *4*. Delirium tremens, that derangement of the nervous functions manifested by optical illusions, hallucinations, mania, and muscular trembling, which arises from exhaustion of the nervous power produced by prolonged stimulation by alcohol. *5*. Chorea, or St. Vitus's dance, an affection occurring generally in young girls, and consisting in irregular contractions of the voluntary muscles, and which has been graphically described as "insanity of the muscles." *6*. The convulsions and paroxysms that occur in infancy and childhood, from the irritation of teething, or from gastric and intestinal derangements. *7*. Tonus, or locked-jaw, a rigid spasm of the voluntary muscles, arising from an exalted state of the reflex function of the spinal cord, sometimes spontaneous, but more frequently the result of incurred wounds. Hydrocephalus may be included under this head. *8*. The rare and curious derangement known as catalepsy and ecstasy. Epilepsy is sometimes a purely functional, sometimes an organic disease. There several diseases will be found described under their special heads in other parts of this work. It is one of the remarkable features of mental disorders, that they are frequently entailed by mimicry or imitation. **Treatment.**—The treatment of nervous diseases often embarrasses the scientific practitioner and requires the most skilful applications. The particular nervous medicines which were formerly considered as specific remedies in such complaints have been given up, and the mode of treatment is now more general and rational, being directed to the restoring and strengthening the general system, by means of nourishing food, gentle exercise, bathing, tonics, &c. It has been held that the advance of civilization and intelligence has rendered the nervous system more irritable, and therefore more liable to be diseased; but a more frequent

Nettle-rash.

cause of nervous maladies is to be found in the excessive use of fermented liquors, wine, tea, coffee, &c., which impair the tone of the stomach, and thus give rise to various forms of nervous disease. Besides attention to the state of the body, it is of the utmost importance to strive to maintain a calm and uniform state of mind, one not easily disturbed by the crosses and accidents of life. The mind and the body reciprocally act upon each other and promote each other's health. The elements of mental discipline which, if steadily pursued fail not to conduce not only to health of mind and body, but also to enduring comfort and happiness, are "the subjugation of gross appetites, the subordination of all turbulent or violent moral and mental emotions, the cultivation of the gentle and contemplative feelings, best cultivated in domestic life and in refined social intercourse, and the regular but moderate application of the intellectual powers to some definite object or set of objects worthy of pursuit"—(Dr. Wilhams.)

NETTLE-RASH, *net' l̄ rāsh* [Lat. *urticaria*] is a disease characterized by a rash or eruption of the skin attended with intense itching; and taking its name from the close resemblance which it bears to that produced by the stinging of nettles. **Character**—The eruption consists of little solid eminences of irregular outline, but generally roundish or oblong, and either white or red or both red and white, the whiteness occupying the central and most projecting part of the spot, or becoming manifest there when the incrustments are put upon the stretch. It is always accompanied with intense heat and a burning or tingling in the affected spots. No part of the body is exempt from nettle rash. There are two varieties of this disorder, one of which is regarded as acute the other chronic and either persistent or intermittent. The acute form is usually preceded or attended with feverishness and a feeling of general uneasiness, headache, nausea, and vomiting. In general it appears in the morning vanishes in the course of a few hours and perhaps reappears again twice or thrice during the day. It usually disappears entirely in six or eight days. The chronic form of this complaint is intractable and difficult to remove coming and going for a long, protracted period, but with little or no feverishness. In most cases, probably in all, this disease arises from some derangement, manifest or latent, of the stomach, and it may frequently be traced to the use of some particular articles of food, as shell fish, oysters, mushrooms, &c. **Treatment**—It is very rarely fatal and the treatment is simple. The great thing is to ascertain and avoid the offending article of food, and by means of light diet and mild laxative medicine, the disease may usually be got rid of in a few days. An ointment is frequently of great

Nicotiana.

service in expelling the offending substance. A few grains of rhubarb, or rhubarb and magnesia, taken daily, just before breakfast and dinner, have been found to cure chronic cases of long standing. Dusting the itching surface with flour will be found to afford temporary relief.

NEURALGIA, *nu-rāl'je-ə d* [Gr. *neuron*, a nerve and *algos*, pain], is an increased and perverted sensation in a nerve, arising from some disease affecting the function or structure of the nerve or its centre. It is thus of two kinds,—functional when unconnected with organic lesion at any part of the nerve's course or at the nervous centres, or, as is more frequently the case, structural, connected with some organic change, acute or chronic, more frequently the latter, at some part of the nerve's course, or at the nervous centres (*causes*). The causes of neuralgia are various, and generally obscure. They may be either constitutional or local, the former arising from some unfeebled state of the body or an impoverished condition of the blood, the latter from inflammation of the enveloping sheath of the nerves, or the development of tumours near or along their course. It may also be caused by the circulation of poisonous secretions, as urea, bile, &c. in the blood, or by the mass of marshy tissue. The pain is intense but intermittent, sudden in its onset and abrupt in its departure, shooting or plunging in its character and often quite excruciating, readily excited by the slightest external impression but seldom aggravated by firm pressure on the part—on the contrary, often relieved thereby. **Treatment**—The treatment necessarily depends much upon the cause whence it proceeds. When it arises from an unfeebled or impoverished state of the body a nourishing diet, and out door exercise will be employed, and in the other cases the treatment will require to be directed to removing the causes from which it springs. Where it depends on the pressure of tumours that can be removed, the pain will generally disappear with the removal of the cause. In inflammation of the nerve-sheath local counter irritation by cupping, blisters, issues, sotomas, &c., usually gives relief, and generally effects a cure. Temporary relief in all forms of neuralgia may be obtained by the administration of powerful anodynes, as morphine, used either externally or internally.

NICOTIANA, *ni-kō-shā'nd*, a gen. of the nat ord. *Astropaceæ*. The species and varieties supply the different kinds of tobacco now in general use in some form or other all over the globe. Most of the tobacco of commerce is yielded by the species *N. tabacum*, a native of the warm parts of America, but now cultivated in various countries. The Shiraz or Persian tobacco is obtained from *N. persica*, the Syrian and Turkish from *N. rustica*, Cuba and Havannah from both

Nicotine.

- N. tabacum* and *veganda*; and Orinoco from *N. macrophylla*.

NICOTINE, *ni'kō-tēn*, a volatile alkaloid contained in the tobacco plant (*Nicotiana tabacum*), in which it occurs in combination with malic and citric acids. It is a limpid, colourless, oily liquid, with an irritating and powerful odour of tobacco. It is extremely poisonous, a single drop being sufficient to poison a large dog.

NIGHT-BLINDNESS is a peculiar affection of the eye, in which the patient sees very well during the day, but becomes blind as night approaches. It is generally met with in warm climates, being rare in Britain, and seems to arise from the excessive stimulus to which the eye is exposed during the day by the strong light in warm countries. It usually gives way to mild antiphlogistic treatment, purging, and blistering on the temples.

NIGHTMARE. (See INCUBUS.)

NIGHTSHADE. (See ATROPA.)

NIPPLE. (See BREAST.)

NITRATE OF SILVER. (See SILVER, *Nitrate of*.)

NITRATES, *ni'-trātēz*, a term applied to a combination between nitric acid and a base. Nearly all the metallic oxides being dissolved by nitric acid, a numerous class of nitrates is thus produced, which, if prepared with heat and with excess of acid, generally contain the metal at its maximum of oxidation. The nitrates are all decomposed by a red heat; they give off oxygen and nitrogen, either separate or combined, and the metallic oxide ultimately remains. The nitrates of the different substances will be found noticed under their special names.

NITRE, *ni'-ter* [Lat. *nitrum*], nitrate of potash. (See POTASH.)

NITRIC ACID. (See NITROGEN.)

NITROGEN, *ni'-trō-jen* [Gr. *nitron*, nitre; *genus*, I generate].—symbol N; t. w.v. 14; density 1.4; spec. grav. 0.9713; a transparent colourless permanent gas, well known as one of the constituents of the atmosphere, which contains volumetrically about 78 per cent. uncombined with 22 per cent. of oxygen. Although characterized by its inactivity when in a free state, it enters into combination with the other elements, forming compounds possessed of the most energetic properties. With hydrogen it forms ammonia; with oxygen, nitric acid; with carbon, cyanogen; with carbon, hydrogen, and other elements, an almost infinite number of bodies, known as the vegetable and artificial alkaloids, such as quinine, morphine, aniline, &c. &c. Besides these, it is an essential constituent of the proximate principles of animal and vegetable bodies; such as albumen, fibrin, casein, &c. It was at first called azote, from its incapability of supporting life; but Chaptal named it nitrogen, from its entering into the composition of nitre, nitric acid, &c. It

Node.

is readily obtained in a variety of ways by abstracting the oxygen from the air. It is incombustible, and does not support combustion. It may be breathed with impunity as far as itself is concerned, but destroys life from the want of oxygen. Its compounds with the metallic elements are of little importance, but the compounds it forms with the non-metallic elements are most numerous and important. With oxygen nitrogen forms five well defined compounds.—NO, Nitrous oxide, or protoxide of nitrogen; NO₂, Nitric oxide, or deutoxide of nitrogen; NO₃, Nitrous acid, NO₂, Peroxide of nitrogen; NO₃, Nitric acid. The first of these, *nitrous oxide*, is commonly known as laughing gas, from the exhilarating effects it produces on the human system when breathed. It was discovered by Priestley in 1776, and minutely investigated by Davy. It is a transparent, colourless gas, soluble in three-fourths of its bulk of cold water, and has a spec. grav. of 1.52. It is neutral and non-combustible, but supports combustion with great energy. Of all the compounds of oxygen and nitrogen, nitric acid is the most important; its power of forming useful compounds with most of bases, and its powerful oxidizing properties, render its uses very numerous in the laboratory. It was known to the alchemists under the name of *aqua fortis*; but its composition was first made out by Cavendish. In its most concentrated form, nitric acid contains one equivalent of water, and has a specific gravity of 1.52. It is a colourless, limpid, powerfully corrosive liquid, boiling at 183° Fahr., and freezing into a buttery mass at -40°. Nitric acid combines with one equivalent of the various bases to form neutral salts, known as nitrates. Nitric acid medicinally is a strong caustic and escharotic, and is recommended as an external application to certain kinds of ulcers or sores. In a diluted form it is used internally as an antalkaline, tonic, alterative, and refrigerant. In a very diluted form it is given as a drink in fevers, particularly typhus. Diluted nitric acid (6 fluid ounces of the acid and a sufficiency of distilled water to make 31 fluid ounces at 60° Fahr.) is given in doses of 10 to 30 minims. It is frequently prescribed with bitter infusions and tincture of orange. Diluted nitro-hydrochloric acid (nitric acid, 3 fluid ounces; hydrochloric acid, distilled water, 25 fluid ounces) is given in doses of 5 to 20 minims, as a tonic, stomachic, and alterative.

NODE, is a hard tumour or swelling upon a bone, usually attended with little pain, but sometimes the pain is considerable, particularly in the nighttime. The bones more particularly liable to it are those which are thinly covered with flesh. The treatment in general consists in attention to the general health, tonics, alteratives, and

Noli me Tangere.

the iodide of potassium. If necessary, fomentations and leeches may be applied.

NOLI ME TANGERE (See LUTUS)

NOMENCLATURE, CHEMICAL. (See CHEMISTRY.)

NON-NATURALS, non-nat'-u-rals, was a term employed by the old physicians to denote certain necessities of life, because, by their use or abuse, they became either good or evil. They usually included six non naturals, viz., air, moist and drink, motion and rest, sleep and walking, the passions of the mind, and excretions and retentions.

Nose, nose [Lat. *nasus*], is the organ of smell in vertebrated animals, and in the three highest classes is connected with the respiratory function. In man the nose, anatomically considered, consists of two lattro cavities, called nostrils (*nares*) a right and a left, formed by the bones of the face and separated from each other by a perpendicular flat partition called the *septum nasi*. The septum of the nose is formed by the vomer, the nasal lamella of the ethmoid bone and an extensive cartilage. The nasal cavities are bounded anteriorly by the nasal bones superiorly by the frontal bone and the cribriform plate of the ethmoid bone and posteriorly by the body of the sphenoid. The floor is formed by the superior maxillary and palatal bones and the outer wall by the ethmoid, the internal pharyngeal plates of the sphenoid bone, the maxillary bone, inferior spongy bone palatal bone, and superior maxillary. Each nostril is divided by the spongy bone into chambers termed the *superior, middle and inferior meatus*. The upper wall of the nose is pierced by numerous foramina, through which enter the filaments of the olfactory, or nerve of smell. The mucous membrane lining the nose is called the *buccinator, or pharyngeal* and is continuous with the common mucous membrane anteriorly and with the mucous membrane of the pharynx posteriorly. It is, for the most part well supplied with vessels, especially veins and presents also numerous glomerular follicles whose secretion is well known. It receives the filaments of the nerves of smell and of common sensation. The nerves of smell arise from the anterior lobes of the cerebral hemispheres, and their fibers rest on the cribriform plate of the ethmoid bone where the branches pierce to the number of fifteen or twenty, on each side, and then run under the mucous membrane, and distributed principally to the septum and outer wall of the nose, communicating with the filaments of the sympathetic cerebral ganglia. Besides smell, the nose has ordinary sensation, like other parts of the face, depending on filaments of the trifacial or fifth pair of cerebral nerves. The external prominent part of the nose, which gives character to the feature, is composed of several cartilages connected to the bones and to each other by strong fibrous tissue, sufficiently firm to pre-

Nosology.

serve the shape of the organ, and so elastic and flexible as to permit the expansion and contraction of the muscles in respiration. The nose is not only the organ of smelling, but serves also as the chief passage of the air into the lungs, and has a considerable influence upon the voice.

NOSOLOGY, *no'lojē* [Gr. *nosos*, a disease, and *logos*, discourse] is generally applied to the methodical arrangement and classification of diseases and their nomenclature. Many attempts have from an early period, been made to classify and arrange under certain groups particular forms of disease; but it is only in comparatively modern times that any thing like a scientific system of arrangement has been attempted. One of the earliest of these was that of Sauvage, who distributed diseases into ten classes, *viz. 1. febris pectoralis apud tubercula et reumatis debilitas doloris, 2. venae, arteriae, cerebrae*. Each of these was again divided into orders. The classifications of Linnaeus, Voigt, and Siegen were of the same nature and arranged similarly, and were all superseded by that of Cullen, which had the advantage of being more simple while it was at the same time more definite and concise. An increased knowledge of physiology and pathology has led to more accurate and natural arrangements of disease. A system of nosology was devised by Dr. William Farr, and discussed at several meetings of the statistical congresses of the great powers of Europe at Paris in 1845, and Vienna in 1847. A committee of the Royal College of Physicians of London was engaged for ten years (1847-57) in devising a system of nomenclature of disease and at length in 1857 they presented a

classification of "nomenclature" to the college which was unanimously adopted. This classification is strictly provisional, and will be subject to change and improvement in time to time, until it will doubtless be fully come into general use. At present, however, the system of Dr. Farr is that best known and most commonly referred to, having been in use for a number of years made use of in the *International Statistical Reports*. It is as follows — *Class I. Zymotic Diseases*, such as no either epidemic endemic or contagious, induced by some specific body or by want of food, or by its bad quality. *1. Miasmatic diseases* — Small pox, varioloid disease, chicken pox, malarial incusions, scarlatina, hybrid of measles and scarlet fever, dengue, quinsy, diphtheria, rickets, croup, hooping cough, typhoid fever, relapsing fever, typhus fever, erysipelas, erythema, hospital gangrene, pemphigus, metritis, plague carbuncle, boil, influenza, dysentery, diarrhoea, cholera, yellow fever, remittent fever, Crimean fever, Hong Kong fever, &c., ague, rheumatism. *2. Infective diseases* — Syphilis primary, syphilis secondary, gonorrhœa, leprosy.

Nasology.

jaw, pellagra, radesyge, purulent ophthalmia, glanders, hydrophobia, necrosis, malignant pustule. 3 *Diseases diseases* — lamina fever, scurvy, purpura, rickets, bronchocele, cretinism, alcoholism, delirium tremens. 4 *Parasitic diseases* — Thrush, porigo, scabies, phthisis, worms. Class II *CONSTITUTIONAL DISEASES*; sporadic diseases affecting several organs, in which new morbid products are often deposited — sometimes hereditary. 1 *Diathetic diseases* — Gout, anaemia, dropsy, cancer, melanosis, lupus, mortification, dry gangrene. 2 *Tubercular disease* — Struma, mesenteric tuberculous, tubercular peritonitis, phthisis, hydrocephalus (Class III). Local Diseases: sporadic diseases, in which the functions of particular organs or systems are disturbed or obliterated, with or without inflammation — sometimes hereditary. 1 *Incas of the Nervous System* — Meningitis, encaphalitis, cerebral, myelitis, polyplegia, paroxysm, shaking palsy, chorea, delirium tremens, mania, monomania, dementia, opisthotonus, hysteria, tetanus, convulsions, kynethaus, nocturnal (the doubtful) tics or fits. 2 *Heart disease* — Carditis, pericarditis, endocarditis, valvular disease of the heart, hypertrophy of heart, atrophy of heart, fatty degeneration of heart, aperistole of heart, aneurism of heart, angina pectoris, fainting, arteritis, atherosclerosis, plebitis, varicose veins. 3 *Lung diseases* — Hypoaptyxis, laryngitis, laryngismus, bronchitis, pleurisy, hydrothorax, empyema, pneumothorax, appendicitis of lungs, paroxysm, pleuro-pneumonia, asthma, emphysema (lungs), granular asthma, intercostal asthma, colic in children. 4 *Bowel diseases* — 1: enteritis, diarrhoea, peritonitis, ileum, constipation, intussusception, dyspepsia, proctitis, gastralgia, haemorrhoids, melena, browned skin, pancreatite disease, splenitis, hepatitis, jaundice, gallstones, cirrhosis, ascites. 5 *Kidney diseases* — Nephritis, ischuria, diuresis, albuminuria (Bright's disease), diabetes, stone, gravel, himaturia, cystitis. 6 *Genetic diseases* — Varicocele, orchitis, hydrocele, hysteritis, etc. no tumours, ovarian tumours, ovarian disease. 7 *Bone and Muscle diseases* — Synovitis, osteitis, exostosis, brittle bones, soft bones, spinal curvature, caries, necrosis, muscular atrophy. 8 *Skin diseases* — Roseola, urticaria, eczema, herpes, pemphigus, rupi, ectyma, impetigo, acne, mentagra, lichen, prurigo, psoriasis, pityriasis, ichthyosis, phlegmon, whitlow. Class IV *DEVELOPMENTAL DISEASES*; special diseases, the incidental result of the formation, reproduction, and nutritive processes. 1 *Developmental Disease of Children* — Still-born, premature birth, atelectasis, malformation, craniostenosis, spina bifida, imperforate orifices, idiocy, congenital deaf muteness, teething. 2. De-

Obstetrics.

velopmental Diseases of Women — Chlorosis, childbirth, paramenitis, chancroid. 3 *Developmental Disease of Old People* — Old age. 4 *Diseases of Nutrition* — Atrophy, asthenia. *Nostrum* [Lat our own] a term applied to quack medicines, the composition of which is kept a secret.

NOSTALGIA, *nostalgia* [Gr *nostos*, I return, *algos*, pain], a term used to denote an intense longing for return to one's native country, a disease not unfrequent among young soldiers, and those whom circumstances have placed in foreign climes. The Swiss are particularly subject to this affection. This vehement home sickness is attended with melancholy, loss of appetite, and want of sleep.

NUTRIENTS (See MINERALS)

NUTRITION, *nutritio* [from Lat *nutrire*, to nourish], is that complicated process by which a perpetual course of reproduction is going on in every part of the system. The living body is constantly losing part of its substance, the component particles of the various tissues — bone, muscle, nerve, &c. They are disintegrated and removed by the vital act of the organism, and are apt to be constantly replaced by new matter in order to be capable of continuing the functions necessary to life. Of the mode in which the substitution of new tissue takes place, our knowledge is as yet very imperfect. Each tissue seems to possess an exclusive affinity for certain constituents of the blood, which it appropriates to its own use in the process of conversion into organized material (See PHYSIOLOGY, DIGESTION, BLOOD &c.)

NYCTOMIA (See STRYCHNOS)

NYCTOLYSIS, *nyctolysis* [from Gr *nyx*, night, *loysis*, vision], is the faculty of seeing best at night. A person suffering from this defect of vision sees little or nothing during the day, but in evening and night has his vision tolerably unobscured. It is owing to a peculiar inaptitude of the retina, which may arise from a sudden or lengthened exposure of the eye to too strong a light or to a deficiency of the black pigment. Sedative applications, as dilute tincture of belladonna, with the internal use of hyoscyamus or camomile and quinine, will be of service when it proceeds from removable cause.

O.

O in medical prescriptions is used to denote a pint, being a contraction of *oreas*, the eighth, a pint being the eighth part of a gallon.

. OAK (See QUERCUS)

. OAK APILLE (See GALLS)

. OATS (See AVENA)

. OBESITY (See CORPULLENCE)

. OBSTETRICS, or MIDWIFERY, is that branch

Occiput.

of medicine which relates to the management of parturition and the treatment of women after delivery

OCCIPUT. (See ANATOMY, Osteology.)

OCELLUS [Lat *oculus*, the eye], is one who treats diseases of the eye (See EYE.)

ODONTALGIA [Gr *odous*, a tooth, and *algos*, pain] is the toothache. (See TOOTHACHE.)

ODEMA, *e-de-ma* [Gr *odeo*, I swell], is a swelling occasioned by the infiltration of serum into the areolar tissue of any portion of the body. It is generally a symptom of some internal disease, the effusion of serum being caused by some obstruction to the return of venous blood to the heart. It hence generally arises from diseases of the heart and blood-vessel, liver, lungs, &c. In all cases, it is simply a symptom produced by different causes, and is to be treated according to the cause by which it is produced. (See DROPSY.)

OEINTRE, *e-in-tre* [Gr *oines*, wine, *enthoe*, flower], a gen. of the nat ord. *Umbelliferae*. The indigenous species (*O. crocata*, the dropwort or dead-tongue, and *O. phellanthrum*, the fine-leaved water drop-wort, are intensely poisonous in most localities. Cautiously administered, however, they are said to have proved efficacious in inveterate scorbutic affections.

OEISAGUS, *e-is'-gus* [Gr *akro* (aco), I carry, and *phago*, I eat], is the gullet, or the membranous tube leading from the pharynx to the stomach, and forming the passage through which the food descends into the latter organ. It commences at the cricoid cartilage, opposite the fifth cervical vertebra, and, descending along the front of the spine, passes through the diaphragm opposite the ninth dorsal vertebra, and there ends by opening into the cardiac orifice of the stomach. Its length is about nine inches, and its direction nearly straight, having only two or three slight curvatures. Its walls are composed of three coats,—an external or muscular, a middle or areolar and an internal or mucous coat. In the neck, the oesophagus lies immediately behind the trachea.

OFFICINAL [Lat *officina*, a shop] is a term applied to such medicines as are mentioned in the pharmacopœia, and directed to be kept in the shops

Oil, CASTOR (See RICINUS.)

Oil of VINEGAR (See SULPHURIC ACID.)

ointment [Lat *unguentum* from *unguo*, I anoint] is a greasy or unctuous preparation of animal fat or fixed oil, with other more active substances. Ointments differ from unguents, and plasters, in being thicker in consistency than the former, and thinner than the latter. When they contain a large proportion of wax, and more nearly approach the consistency of a plaster, they are termed *cerates*. Ointments are external applications used for the dressing of wounds and sores of all kinds, being healing, cleansing,

Ophthalmia.

stimulating, &c., according to their several ingredients. Among those in more common use may be mentioned antimonials, gall, mercurial, resin, spermaceti, sulphur, zinc. **OLEA,** *o-le-a* [Gr *elaia*, oil], the typical gen. of the nat ord. *Oleaceæ*. The species *O. Europæa* is the olive-tree, one of the most celebrated and useful of plants. The ripe fruit has a very fleshy pericarp, which yields, when pressed, a fixed oil, called olive-oil. This valuable product is used for dietary purposes, in the arts, and in medicine. In medicine, the oil is principally employed externally, either by itself or mixed with other materials, in cataplasms, ointments, and plasters. When administered internally, it is nutrient, emollient, demulcent, and laxative. Dose, $\frac{1}{2}$ to 1 fluid ounce.

OLEACEOUS [*olus*, a potherb] is applied to substances partaking of the nature of pothebers.

OLEMUM (See OILS.)

OLFACTORY NERVES are the nerves of the organ of smell.

OLIBANUM, o-lb'-a-num [Gr *libanos*, the frankincense tree], a fragrant gum resin, chiefly used as a fumigator. Indian olibanum is the produce of *Boswellia thurifera*, but African or Arabian olibanum appears to be derived chiefly from another species—*B. floribunda* according to Boyle. It is used medicinally as a stimulant, astringent, and diaphoretic. (See BOSWELLIA.)

OLIVE (See OLEA.)

OMENTUM [Lat *omen*, an omen] is one of the numerous folds or duplicatures of the peritoneum or lining membrane of the abdomen. The omentum is attached to the stomach, and lies on the anterior surface of the intestines. It is distinguished into the great omentum and little omentum, to which some anatomists add the colic omentum, and the gastro-splenic omentum. The omentum, which is always double, contains between its lamellæ adipose tissue or fat.

ONION (See ALLIUM.)

OPHELIA, *o-fé'-le-a* [Gr *useful*], in Bot., sometimes called *Agathaea*, a gen. of the nat ord. *Gentianaceæ*. The species *O. chirata* is the medicinal herb known as chiretta or chirayata. (See CHIRETTA.)

OPHTHALMIA, *o-fthal'-mea* [Gr *ophthalmos*, the eye], is an inflammation of the eye. General ophthalmia is of very rare occurrence, the disease being in the great majority of cases confined to some one of the parts, and having a distinct name; as conjunctivitis, iritis, or cornatitis, denoting inflammations of the conjunctiva, iris, or cornea, respectively. The most frequent form of ophthalmia is inflammation of the conjunctiva, or membrane lying the outer surface of the eye. It may be caused by the presence of any irritating body, and is frequently produced by cold, when it is known, as asthmatical ophthalmia. In it the eyes are

Ophthalmia.

bloodshot, the redness being produced by injection of the network of vessels which covers the white of the eye; the lids are swollen, with a great deal of smarting and itching, and a feeling as if there were sand or other foreign body in the eye. There is at first lacrimation, which is soon followed by the secretion of a thin muco-purulent discharge, which accumulates at the corners of the eyes. This is ordinarily a mild and manageable complaint, and may, in most cases, be got rid of by rest, a brisk purgative, and the occasional application of tepid water, or milk and water, to the eye. If the inflammation does not subside in a day or two, the eye may be bathed several times a day with a dilute solution of alum or sulphate of zinc; and, in severe cases, blood-letting, by means of cupping-glasses or leeches applied to the temples. A much more severe form of conjunctivitis is *purulent ophthalmia*, or, as it is frequently called, *Egyptian ophthalmia*, from its having been brought into this country by the army returning from the expedition to Egypt during the wars of the first Napoleon. In this all the symptoms of the preceding are greatly aggravated. The conjunctiva is red and swollen, rising up like a wall round the cornea; the eyelids are tense, livid, and often enormously swollen; a copious secretion of muco-purulent matter is poured out, and there is a burning pain in the eye, with inability to bear the light. It requires prompt and decided treatment, as there is always great risk of permanent injury to the eye, from its tendency to produce thickening and granulation of the conjunctiva of the lids, or ulceration and sloughing. In the severer forms of the disease recourse must be had to bleeding, either general or by means of cupping-glasses or leeches, and purgatives, and the various other antiphlogistic means employed. The eye should be frequently cleansed with warm water, or a weak warm solution of alum or bichloride of mercury, and one or two drops of a weak solution of tincture caustic (from two to four grains to an ounce of water) should be let fall into the eyes once or twice a day. Infants of a few days old are often subject to a very severe form of inflammation of the conjunctiva, to which the name of *ophthalmia neonatorum* (ophthalmia of new-born infants) has been given. In mild cases, bathing or cleansing the eye several times a day with a weak warm solution of alum may be all that is necessary; in severe cases a leech should be applied to the temples, purgatives administered, and a weak solution of nitrate of silver (1 grain to an ounce of water) applied to the eye daily. *Sternorrhena* or *serous ophthalmia* occurs in children of sororulous habits, and is chiefly remarkable for the extreme intolerance of light by which it is accompanied. The child keeps its head down, shelters its eye with the hand, and

Opiate.

avoids the light. The eye itself presents little appearance of inflammation, merely a faint blush of redness; but in many cases little pustular elevations form upon the edges of the cornea. In such cases the treatment should be chiefly adapted to the constitutional disorder from which it springs. Pure air and exercise, mild aperients, and tonics, especially bark and iodine, should be administered, and the general health carefully attended to. Slightly astringent lotions may also be applied to the eyes, and in the earlier stages a few leeches, or blisters behind the ear, are of great service. In scleritis, or inflammation of the sclerotics, when pure (but it is apt to be complicated with inflammation of the conjunctiva, cornea, or iris), the redness of the eye is of a pink tint, forming, when most marked, a zone round the cornea, and gradually shading off towards the circumference of the eye. There is always considerable pain, of a dull, heavy kind, which often extends all round the orbit, or over the forehead, and is accompanied by an intolerance of the light and a profuse secretion of hot tears. Warm fomentations are of service locally; besides which, a dose of calomel and opium at bedtime, followed by a purgative on the following morning, will generally remove the affection. In severe cases, blood-letting, and counter-irritation by means of blisters, are likewise necessary. The other forms of ophthalmia are much less common than the above, and their mode of treatment does not differ materially from that just given.

OPHTHALMOSCOPE is an instrument recently invented for examining the deep-seated structures of the eye, and detecting disease in them. In its simplest form it is a concave circular mirror of about 8 inches focus, with a hole in the centre. It may be mounted on a handle 4 or 5 inches long. There is also necessary a convex ocular lens, an inch and a half in diameter, with a focus of $2\frac{1}{2}$ to 3 inches, set in a common eye-glass frame. The patient is seated by a table in a dark room with a sliding argand lamp by his side close to his head, with the flame on a level with the eye, from which it is screwed by a little flat plate of metal attached to the burner. The operator sits directly in front, and holding the instrument close to his eye, commences at the distance of about 18 inches from the patient to direct the reflection on the eye. When this is got, the convex lens is held at the distance of $2\frac{1}{2}$ inches from the eye, and the focusing commenced by moving them slowly backwards and forwards till the optic disc and blood-vessels of the retina are brought into view. Dr. Druitt's "Surgeon's Vade Mecum," tenth edition, 1870.)

OPIATE, a name used to denote any preparation of opium or any medicine that produces sleep.

Opium.

OPPIUM. *o-pi-üm* [Gr. *opos*, juice], the impregnated juice of a species of poppy (*Papaver somniferum*), originally a native of the East, but now naturalized throughout most of Europe. The best opium is procured by making longitudinal incisions in the green capsules, which contain a prodigious number of seeds. The incisions are made during the evening, and the milky juice which exudes is allowed to remain for twenty-four hours to acquire consistence, when it is removed, and the process repeated. The principal countries in which opium is prepared are India, Turkey, and Persia. Indian opium is of three kinds; of which the chief are Patna, grown in the provinces of Behar and Benares, the former of which is most recte-mol; the third kind, produced in the province of Malwa, is still less esteemed than that of Benares. The best-esteemed opium, however, is that obtained from Turkey. The opium of commerce is in masses of different sizes. It is rather hard, brown in colour, and possesses a bitter, acrid, and nauseous taste. Its odour is characteristic, and when heated in the air it kindles, but does not burn readily. Its analysis shows that it contains morphine, codeine, papaverine, narcotine, thebaine, narceine, and mesconine, all of which form well-marked salts with the acids. It also contains mesconic and thebolic acids. These principles are very fully described in Miller's "Elements of Chemistry," Part III., to which the student is referred. Opium is the most energetic of narcotics, and one of the most valuable of all medicines. In procuring relief from pain, it is at all times invaluable. It is most commonly used for the purpose of procuring sleep. It acts specially upon the brain, first exciting nervous sensibility and then diminishing it. It increases the rapidity and fulness of the pulse, promotes heat and perspiration through the skin, but arrests the other secretions. Hence it acts as a diaphoretic, and is also valuable in restraining morbid discharges, as in diarrhoea and cholera. It is an invaluable remedy in all spasmodic affections; and in large doses has been found to be of great service in delirium tremens, in neuralgia, tetanus, and convulsions, it is very beneficial. In large doses it acts as a narcotic poison, and when habitually used it acts very injuriously upon the digestive organs and the general health. It is apt to produce nausea, headache, thirst, and constipation. In opium poisoning, the antidotes are an emetic or the stomach-pump, external stimulants, compelled exertion, and artificial respiration. The dose of opium is from $\frac{1}{2}$ to 2 grains. The principal preparations of opium are—the confection (100 grains of the compound powder to a fluid ounce of syrup), dose 5 to 20 grains; plaster (1 ounce of opium in fine powder, and 9 ounces of resin plaster) to relieve local pain; *enema* ($\frac{1}{2}$ fluid drachm of tincture and 2 fluid ounces of

Orthopaedic Institutions.

mucilage of starch); extract (1 pound of opium in thin slices, and 6 pints of distilled water, macerated, expressed, strained, and evaporated to a consistency for pills), dose $\frac{1}{2}$ to 5 grains; *tincture extract* (extract 1 ounce distilled water, 16 fluid ounces, and rectified spirit, 4 ounces), dose 10 to 40 minims; *tincture* (tincture of opium and liniment of soap, of each ounce); *compound pill* of 3, opium in powder, $\frac{1}{2}$ ounce; hard soap in powder, 2 ounces; distilled water, a sufficiency), dose 3 to 5 grains; *compound powder* (opium, in powder, $\frac{1}{2}$ ounce; black pepper, in powder, 2 ounces; ginger, in powder, 5 ounces; caraway fruit, in powder, 6 ounces; tragacanth, in powder, $\frac{1}{2}$ ounce), dose 2 to 5 grains; *tincture* (opium, in coarse powder, $\frac{1}{4}$ ounce; proof spirit, 1 pint), dose 5 to 40 minims; *ammoniated tincture*, dose $\frac{1}{2}$ to 1 fluid drachm, *lozenges* (each containing $\frac{1}{2}$ of a grain of the extract), dose 1 to 6 lozenges; *wine* (extract, 1 ounce; sherry, 1 pint; cinnamon bark, and cloves, each 75 grains), dose 10 to 40 minims; *hydrochlorate of morphia* (opium sliced, 1 pound; chloride of calcium, $\frac{1}{4}$ ounce; purified animal charcoal, $\frac{1}{4}$ ounce; diluted hydrochloric acid, 2 fluid ounces; solution of ammonia and distilled water, of each a sufficiency), dose $\frac{1}{2}$ to $\frac{1}{4}$ grain; *acetate of morphia* (hydrochlorate of morphia, 2 ounces; solution of ammonia, acetic acid, and distilled water, of each a sufficiency), dose $\frac{1}{2}$ to $\frac{1}{4}$ grain; *solution of acetate of morphia*, and *solution of hydrochlorate of morphia* (in addition to 4 grains of either, 8 minims of diluted acetic or hydrochloric acid respectively, 2 fluid drachms of rectified spirit, and 6 fluid drachms of distilled water) dose 10 to 60 minims.

OPONEDOC. (See SOAP LINTIMENT.)

OPONAX. *o-pöp'-ä-näk* [Gr. *opos*, juice; *panax*, the panaceo herb], a fluid gum-resin, which formerly enjoyed a high repute as an antispasmodic medicine. It is imported into this country from Turkey, and appears to be obtained from incisions made in the root of an umbelliferous plant, to which the name *Opopanax chironium* has been given.

OPTIC NERVE. (See EYE.)

ORANGE. (See CITRUS.)

ORANGE PEEL. (See AURANTI Cortex.)

ORGANIC AND INORGANIC CHEMISTRY. (See CHEMISTRY.)

OPERMENT is the yellow sulphuret or tor-sulphuret of arsenic. (See ARSENIO.)

ORASIS-ROOT, the root of the *Iris florentina*, a white flowering species of iris, which grows in southern Europe. It is well known in its dried state on account of its exhaling a pleasant odour, resembling that of sweet violet.

ORTHOPAEDIC INSTITUTIONS, or-thö-pä-de-ik [*Gr. orthos*, and *paideia*, training], is the name given to establishments devoted to the cure of deformities, more particularly those of the spine, ribs, and pelvis. This is a branch of surgery that has been much

Oryza.

cultivated of late, particularly in Germany and France; and many astonishing cures have been effected by perseverance and ingenuity. (See GYMNASTICS.)

Oryza, *o-riv'-z*a**, a gen. of the nat. ord. *Gramineae*. *O. sativa* is the rice-plant, the grain of which is more largely consumed as food than that of any other cereal. Rice is extensively cultivated in India, China, Japan, &c., chiefly on low grounds, near large rivers, which are liable to be annually inundated and enriched by the deposition of mud. In the Southern States of America it has long been a staple commodity. As a grain of food, rice appears to be less nutritious than the other cereal grains; it is of a binding nature: hence its use in diarrhoea.

Os. (See BONE, ANATOMY.)

Ossification, *os-sif-i-k*a*-shun* [from Lat. *os*, bone; *ficio*, I make], the formation of bone.—In the growth of the skeleton of man and the higher animals, this process goes on naturally, and it occurs in the reproduction of new bones after the destruction or loss of old ones. Ossification also occurs as an unnatural or morbid process, and is observed in several tissues of the body. It occurs most frequently in the cartilages of the ribs, where the process is almost constantly going on in advancing years. The disease called ossification of the heart is not an affection of the proper substance of that organ, but of its valves, in which earthy matter is sometimes deposited, thus rendering them stiff and unyielding. This substance is composed of carbonate and phosphate of lime, as bone is; but its particles have no definite arrangement.

Osteology, *os-te-o-lo-je* [Gr. *osteon*, a bone, and *logos*, a discourse], is that part of the science of anatomy which treats of the bones. (See ANATOMY, BONE.)

OTALGIA AND OTITIS. (See EAR, DISEASES OF THE.)

OUNCE, *ounz* [Lat. *uncia*], is a denomination of weight. (See APOTHECARIES' WEIGHT.) The fluid ounce is the measure of an ounce of water, containing 8 fluid drachms or 480 minims. 20 fluid ounces make 1 pint. A table-spoonful is considered to be $\frac{1}{2}$ an ounce.

OVARY [Lat. *ovarium*, from *ovum*, an egg], in Anat., is the name given to two flat oval bodies, about an inch in length, and rather more than half an inch in breadth and thickness, situated on either side of the uterus, to which they are attached by ligaments, and the Fallopian tubes. The ovaries are liable to a variety of diseases, but that which is most common is the ovarian tumour, or ovarian or encysted dropsey. The tumour sometimes attains enormous size. Of the means used to remedy this disease are, medicines for promoting absorption, or atrophy; tapping; and ovariotomy, an operation requiring great experience and skill.

Oxyacids.

OVUM, or *Egg* [Lat.], is a body produced by the females of birds and certain other animals, containing an embryo of the same species. The eggs of the common domestic fowl are a favourite article of food, and are nutritious and easy of digestion when lightly cooked. Beat up in a cup of tea, coffee, or chocolate, or a glass of wine, it is well adapted to invalids with weak digestion. The white of egg, from the quantity of albumen which it contains, is one of the best antidotes in poisoning by corrosive sublimate, the salts of copper or zinc. The yolk is used in making emulsions, &c. The shell, being composed chiefly of carbonate and phosphate of lime, may be used, finely powdered, as a substitute for chalk or lime, in poisoning by mineral acids, when these are not to be had.

OXALIC ACID, *oks-äf'-ik* [Gr. *oxys*, acid], $\text{HO}_2\text{C}_2\text{O}_4$, a very powerful organic acid existing, ready formed, in the leaves of the wood-sorrel, rhubarb, and in many other plants having an acid taste. It is also found in combination with lime, in crystals, in the juices of many vegetables. It crystallizes in fine, transparent, four-sided prisms, and dissolves in nine parts of cold water. Its solution has an intensely sour taste, and acts as a violent poison, occasioning death in a few hours. Its best antidote is the administration of chalk, or magnesia, suspended in water, with which it forms an inert and fusible oxalate. It greatly resembles Epsom salts in appearance, and has been frequently administered for that popular purgative with fatal consequences.

OXALIS, *ok-sä-u-lis*, a gen. of the nat. ord. *Oxalidaceae*. The common wood-sorrel, *O. acetosella*, which abounds in our woods, is a well-known species. When infused in milk or water, it forms a pleasant refrigerant drink in fever. The leaves, taken as salad, are antiscorbutic.

OX GALL. (See FER BOVINUM.)

OXIDATION is a term applied to the union of any body with oxygen, such body being said to be *oxidized*, and the resulting compound being termed an *oxide*. All the elements, except fluorine, combine with oxygen to form oxides. In this act of combination heat is always, and light is frequently, given off.

OXIDES are compounds of other bodies with oxygen. They form a numerous and very important class of substances, and are usually divided into three groups—(1) alkaline, or basic oxides; (2) acids; (3) neutral oxides. It very frequently happens that a body is capable of uniting with oxygen in several proportions. Hence the use of the names *protoxide*, *dioxide* or *deutioxide*, *teroxide* or *trioxide*, *peroxide*, &c.

OXYACIDS.—Acids, such as the nitric, sulphuric, chromic, &c., in which it is supposed that oxygen forms the acidifying principle,

Oxygen.

as distinguished from the hydrides, in which hydrogen is thought to play that part. The salts formed from them are called oxyacids, in opposition to the *haloids*, or by acid salts.

OXYGEN. *oxy'-e-jen* [Gr. *oxys*, acid, and *genos*, I generate], symbol O equiv 8, spec. grav (air = 1) = 1.057 ditto (hyd = 1) = 1.6, comb. vol 1, 700 cubic inches weigh 34.023 grains. Oxygen is the most abundant of the elements. It forms $\frac{1}{8}$ of water, $\frac{1}{5}$ of air, and about $\frac{1}{4}$ of silica chalk, and alumina the three chief constituents of the earth's surface. It is also the most important element, being essential to the support of animal life. It is met with in nature in mechanical combination with nitrogen as in the atmosphere which surrounds our globe. It is also given off by growing plants, under the influence of direct sun-light. It possesses strong chemical properties, uniting with all the elements except fluorine, in a large number of proportions. It is tasteless, colourless, inodorous and has hitherto resisted all efforts at compression. It is the least refractive of all the gases, and possesses magnetic properties similar to those of iron. It is sparingly soluble in water, being only absorbed in the proportion 3 per cent. Oxygen is readily procured in a pure state from a great number of compounds. For laboratory use it is mostly obtained by heating chlorate of potash finely powdered and mixed with one eighth its weight of oxide of copper, iron, or manganese. The majority of the metals do not unite spontaneously with dry oxygen or air, but in moist oxygen ("air" many of them become slowly oxidized). An account of the principal compounds of oxygen will be found under the head of the elements with which it is united.

OXYMEL. —An acridulous syrup, made of honey and vinegar. It is commonly used to form gargles, or as a vehicle for expectorant medicine, or to form cooling drinks in fever. The oxymel of the Pharmacopœia is formed by liquefying 40 ounces of clarified honey, by heat, and adding 5 fluid ounces each of acetic acid and distilled water, dose, 1 to 2 fluid drachms. *Oxymel of Squill* (vinegar of squill), 1 pint and clarified honey, 2 lb mixed, and evaporated by water-bath till the product, when cold, has a spec. grav of 1.32; dose, $\frac{1}{2}$ to 1 fluid drachm.

OLIGIA, *c. sa'-nd* [Gr. *oligos*, smell], a disease characterized by a discharge of fetid purulent matter from the nose-holes. It is owing to inflammation or ulceration of the mucous membrane, and may follow on a common catarrh. It is most common in persons of strumous or delicate constitution. *Treatment* —The treatment consists in strengthening the system by means of nourishing diet and tonics, as bark, with mineral acids, iodide of potassium, and cod-

Pancreas.

liver oil. A dry, bracing atmosphere should also be sought, and the nostrils should be well syringed once or twice a day with warm water, to which some alum, or zinc, or a solution of permanganate of potash (5 or 10 grains to a pint of water), may be added.

OZONE. *o'zone* [Gr. *oxys*, a stench], a peculiar modification of oxygen, supposed to be that gas in a permanently negative state, and exhibiting very energetic properties, as compared with the gas in its ordinary condition. It bleaches the vegetable colours, converting indigo, for instance, into colourless isatin. It appears to act most beneficially as a disinfectant in the economy of the world, it having been proved that epidemic diseases such as cholera, fever, &c., are always accompanied by either entire or entire absence, of this agent from the atmosphere.

P.

PAIN though we are apt to look upon it as an evil, is no doubt intended to serve a good end. It indicates an abnormal or diseased state of some part of the system, and points out where the remedy is to be applied. Insensibility to pain, desirable as it may seem in place of being an advantage would be a decided disadvantage. Pain is to the medical man one of the chief indications from which he determines the natural seat of a disease or injury; and the removal or alleviation of pain is one of the principal objects of his art.

I. VINTAGE COLIC. (*See Colic*.)

PALATE. *pal'-at* [Lat. *palatum*], the roof or upper part of the mouth. In man it is composed of two parts—the hard palate which forms an arch in the anterior part of the mouth and the soft palate which lies in the posterior part of the mouth, and consists of a membranous curtain of muscular and cellular tissue, from the middle of which hangs the uvula.

PALLIATIVE [Lat. *pallio*] [I. assemble] is a term applied to anything which is used in order to palliate or relieve a disease, but which is incapable of curing it.

PALPITATION [Lat. *palpito* I. throb] is an increase in the force or frequency of the heart's action. It is frequently produced by increased physical activity or mental emotion and is sometimes the result of disease. (*See Heart, Diseases of the*)

PARRY. (*See Paralysis*.)

PANACIA, *pan'-a-see-a* [Gr. *pan*, all, and *aceia*, I heal], a term applied to remedies which were believed to cure all diseases.

PANCREAS, *pan'-kre-æs* [Greek, pan, all, and *kreas*, flesh], is a single glandular organ, situated transversely across the upper-part of the abdomen, at the posterior part of the epigastric region, about on a level with the

Papaver.

last dorsal vertebra. It is of an irregular elongated form, from six to eight inches in length, an inch and a half in breadth, and from half an inch to an inch thick. The right extremity, or head, is curved upon itself from above downwards, and is emarginated by the concavity of the duodenum. Its body tapers towards its left extremity, where it forms a tail, terminating at the spurion. The pancreatic duct extends from left to right through the substance of the pancreas, giving off numerous branches, and terminating in the common choledochic duct, which conducts its secretions to the duodenum. In structure, the pancreas closely resembles the salivary glands, but it is looser and softer in texture; and the fluid secreted is almost identical with saliva. Its object is believed to be to reduce fatty matters to the state of an emulsion, and thereby promote their absorption by the lacteals. The amount daily secreted by man is from five to seven ounces, and it is most abundant at the commencement of digestion.

PAPAVER., *pá-páv'-er*, the Poppy, a gen. of plants belonging to the nat. ord. *Papaveraceæ*. The species *P. somniferum*, the garden or white poppy, furnishes the valuable drug *opium*, used so largely in medicine, and as a narcotic indulgence. Opium is obtained by making incisions into the unripe capsules, and insipitating the milky juice which exudes from them. (See OPIUM.)

PAPILLA. (See TONGUE.)

PARALYSIS, or **Palsy**, *par-dl'-i-sis* [Gr. *paralisis*, relaxation], is the loss of the natural power of sensation or motion, or both, in any part of the body. It is owing to some diseased condition of the nervous system, either of the brain or spinal cord, or of the nerves. **Characteristics.**—If the nerves of sensation or their centres be affected, there will be loss of sensation; if of motion, then loss of motion; to the latter of which the term *paralysis* is by some exclusively applied. Each of these kinds may, again, be general or partial, or may have various degrees of severity. It may affect only one nerve or muscle, or it may affect a number. The most usual form is when one side or half of the body is deprived of sensation or motion, or both, called *hemiplegia*; *parephlegia* is when the lower part of the body is paralyzed, while the upper retains both sensation and motion; and *general paralysis* is when the loss of nervous power extends over nearly every part of the body. In *hemiplegia*, the seat of the disease is one side of the brain, usually that opposite to the affected side of the body; in *parephlegia*, the lesion is within the spinal cord; and, when more limited in extent, the disease usually arises from some abnormal state of a particular nerve. Paralysis frequently follows apoplectic attacks, and this usually in its most severe and dangerous form. The

Paregoric.

prognosis must be looked on as extremely unfavourable when the attack is sudden, the paralysis extensive and complete, and the loss of consciousness protracted; while, on the other hand, when the paralysis advances gradually, there is more reason to hope for prolonged life, if not for a complete restoration of health. (See APOPLXXY.) Among the other causes that may give rise to paralysis are various injuries and diseases of the brain or spinal cord, as tumours, inflammation, external injuries, &c. When paraparesis takes place without any previous apoplectic attack, the premorbid symptoms are a general torpor or lassitude, occasional giddiness, or a sense of weight and pain in the head, and loss of memory. When it is the result of injury of the spinal cord, then, of course, the paralysis takes place instantly. Paraplegia sometimes lasts for many years without greatly interfering with any function except locomotion; but when it occurs during fevers, and advances rapidly, it is of very sinister augury, especially if it involve the sphincter muscles of the anus and bladder. Sometimes there is a gradual loss of power in the muscles or muscles affected; and in many cases the loss of power is preceded by severe pains in the part, cramps, a sense of numbness or tingling, and a curious feeling of coldness. **Treatment.**—Paralysis is not a disease of itself, but only a sign of some disorder of the nervous system, probably at a distance from the parts affected. In each case, therefore, the cause of the disorder is to be investigated, and the mode of treatment principally directed to its removal. In very many cases, however, little can be done either in the way of cure or of alleviation. Where, as in many cases, it is owing to a deranged state of the general health, attention should, in the first instance, be directed to the best means of re-establishing this. With this view, the bowels should be kept gently open, and light nourishing diet prescribed; and tonic bitters, with, in some cases, small doses of some preparation of iron, have been found useful. Beyond this, regard must be had to the age and condition of the patient. If young, and of full habit, bleeding may have to be had recourse to, more particularly if the head be much affected, and this followed by purgatives. The quantity of blood drawn should always be regulated by the strength of the patient and the duration in which the symptoms approach to those of apoplexy. If the patient be feeble and debilitated, the treatment should be confined to purgatives; and in both cases stimulants, both external and internal, as blisters, hot turpentine liniments, or electricity. In weakly habits warm bathing is sometimes found useful.

PAPULOSA. (See PARALYSIS.)

PAREGORIC, or **PAREGORIC Elixirs** [Gr. *páregoreo*, I mitigate, or assuage], in Eng-

Parietal Bones

land is the name sometimes given to the compound tincture of camphor (See CAMPHOR.) In Scotland it is applied to the ammoniated tincture of opium (See OPIUM.)

PARITAL BONES. (See ANATOMY, Osseology.)

PARITARIA, *pār-i-tā'ri-ā* [Lat. *paries*, the wall], a gen. of the Nettle ord.—*Urticaceæ*. *P. officinale* is the wall nettle, very regarded as a valuable diuretic and lithotriptic.

PARONYCHIA. (See WHITLOW.)

PAROTID GLAND, *pār-ōt'ēd* [Gr. *para*, and *ots*, the ear], is the largest of the salivary glands, and is so named because it is situated near the ears. It is subject to tumours, which are often difficult to remove (See MUMPS.)

PAROXYSM, *pār-ōk'sis* [Gr. *paroxysmos*] is a fit or periodical exacerbation of a disease that occurs at intervals or has decided remissions or intermissions, as in the case ofague, gout, insanity, &c.

PARELIX. (See FIGHT OF FLINCH.)

PARENTS. (See PARENTS.)

PAN VAGINUM [Lat. *pan* the wandering pain] a name given to the eighth pair of nerves on account of its going to a number of different parts. It is also called the *genito-iliac*, and sends off branches to the tongue, larynx, lungs, heart, stomach, &c.

PASTILLE [Lat.] is a composition of sweet smelling resins and aromatic substances used for fumigating sick rooms and covering unpleasant odours.

PASIFLORA *pās'i-flōr'ā*, a gen. of *Urteil* lifers. The root of *P. edulis* is the nutritious and wholesome culinary root called the *passap*.

PATELLA. (See KNEE.)

PATHOLOGY, *pāth'ō-lōjē* [Gr. *pathos*, disease, and *logos*, discourse] is the science or doctrine of diseases. As physiology teaches the nature of the functions of the living body in a state of health, so pathology relates to the various derangements of those functions which constitute disease. It is usually divided into *general* and *special* pathology. As each disease is marked by certain peculiarities which distinguish it from all others, there must be a pathology of each or in other words, a special pathology and, on the other hand, many diseases possess certain features in common the description of these features will no longer be special, but general pathology. The latter, therefore, treats of what is common to a number of diseases, taken as a class, the former, of what is special to individual diseases. Special pathology comes first in the order of nature. It is made up of individual facts carefully observed, arranged and classified according to some nosological plan. General pathology collects those facts wherever found, which have a certain similarity, and arranges them according to their natural analogies, so that whoever examines them

Pathology.

in this view will have no difficulty in appreciating them as phenomena of particular diseases. Disease is a change from the natural condition of the function or structure of the body. Disease of function is known by its deviation from a standard furnished by physiology, of structure, by its departure from a standard supplied by anatomy. This is, however, seldom a structural disease without some disorder of function, and frequently disease of function accompanies or brings about disease of structure. A knowledge of the constituent parts or elements of structure and function is necessary to the pathologist in the study of disease, before he can properly understand their combinations. As in chemistry, some elements are ultimate or primary, and cannot be analyzed or divided further, others are proximate or secondary. The primary or ultimate elements of structure are muscular fibre, nervous matter, vascular fibre, and the elementary tissues of membranes, and these are primary elements of function of these structures irritability, tonicity, and nervous properties, to which may be added, here also at present we cannot analyze it, the power of secretion and nutrition. Lastly, there are the constituents of the blood, which are subject to manifold alterations of structure and derangement of function. The secondary or proximate elements of disease are composed of the preceding primary elements, but are still simple in comparison with the complex conditions of disease which they combine to produce. The varieties of disease affecting the several elements may be comprehended under the heads of *organic* and *functional* including excess and defect or alterations of plus and minus and kind relating to changes in composition under these heads but otherwise expressed by the term perversion. "The primary and secondary elements of disease are the special subjects of general pathology. By the study of them we become acquainted with the material of disease and their relation to each other; we learn how special diseases also and of what they consist, how they produce their phenomena and effects, how they are to be known distinguished and classified. Out of such a knowledge where it is correct, sufficient and combined with an ample acquaintance with the properties of remedial agents, arises the rational method of relieving, curing, and preventing disease, the great end of the art of medicine"—(Williams). Following, then, the classification of Dr. Williams, we have as the first of the primary elements of structure, muscular or contractile fibre, the distinctive property of which is irritability, or the property of contracting on the application of a stimulus or exciting agent. This may become excessive, or too violent for the welfare of the part or system and will be manifested (1) by an excess of strength and degree, (2) by

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an inordinate quickness or promptitude; or (3) by the unusual duration of the contractions. Muscular contractility may be defective chiefly in two modes—(1) in force, as in the weakness caused by the exhaustion of previous exertion; or (2) in readiness to contract, as in the sluggish movements of a person under the influence of opium. Tonicity, or tone, is another property possessed by all muscular structures, and keeps the parts in which it resides in a certain degree of tension. With an excess of tonicity the muscles are so firm as scarcely to afford room for supple motion, and the pulse is hard, tenuo, and often slow. Where tonicity is defective, the muscles are flabby and incapable of exertion, and the pulse soft and yielding. The functions of the nervous system are resolved into those of the nervous centres, which generate and combine nervous influence and force; and those of the nerve trunks and branches, which conduct this influence or force. The functions of the nerves are also distinguishable as being either of sensation, voluntary motion, involuntary motion, or sympathy. A diseased state of a centre will cause a disorder of general sensibility of one or more of the nerves. Diseases of sensibility may consist in (1) excessive sensibility, (2) defective sensibility, or (3) perverted sensibility. The function by which certain nerves convey the impulses of the will to voluntary muscles may become disordered, and its phenomena constitute an element of disease. It may be in excess, defect, or perverted. The reflected and sympathetic nervous influences may, in like manner, become diseased. Secretion is regarded as a peculiar property of the secretory structures, as irritability of muscular fibre; and from the ubiquity of the process it constitutes an important element of disease. It includes recrementitious products (those concerned in digestion, assimilation, and nutrition), as well as excrementitious products. It may be excessive, and weaken by the drain which it causes from the mass of the blood; but it may also have special effects upon the organ of secretion, the blood from which it comes, or the parts to which it is carried. The most common causes of altered secretion are those which operate on the sanguiferous system and its contents. The effects of defective secretion are the opposite of those of excess, and may arise from a weakened state of the whole circulation, or of the secreting organ. Perversion of secretion often accompanies excess or defect, as in febrile diseases, when the secretions of the kidneys are altered as well as diminished. The blood, like the solid parts of the body, is composed of sundry elements, which are subject to change, and produce various disorders. The components of the blood are, (1) the red particles, (2) fibrin and colourless globules, (3) albumen and other dissolved

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animal matters, (4) oil, (5) salts, (6) water; any of which may be in excess, defect, or alteration. The red particles are proportionally large in persons of sanguine temperament, and excessive in sanguineous plethora, and in hemorrhagic diseases before much blood is lost. They are defective in persons of lymphatic temperament, and after great losses of blood. An excess of fibrin and of the colourless globules exists in all truly inflammatory diseases. The changes effected in the blood by respiration are liable to variations, and form an important element of disease. They are principally owing to defect of change, as in asphyxia. It is doubtful whether this change is ever carried on in excess. Various changes are effected on the blood by excess or defect, or alteration of secretion of urine, bile, perspiration, &c. Changes are also effected on the blood by the presence of foreign matters, as poisons. The class of proximate elements which have been most generally studied as the subjects of general pathology, are those affecting the circulation of the blood. They comprise at least three of the primary elements, the condition of the blood and its constituents, the irritability of the organs concerned in its distribution, and their tonicity. *Anæmia* is the name given to that condition of the system in which the predominant character is a deficiency of blood, usually accompanied also with a remarkable deterioration in quality. The causes which excite anæmia are various circumstances which injure the blood or withdraw portions of it from the system; as excessive bleedings, profuse evacuations of fluids, &c. The excess of blood in the system, or in a part—*hyperæmia* or *polyæmia*—is a frequent cause of disease. Plethora, or general excess of blood, may proceed either from too much blood being made, or from too little being expended; in either case the blood accumulates and fills the heart and blood-vessels beyond the usual degree. The distinction of plethora into *sthenic* and *asthenic* depends on the strength and irritability of the motor fibre. In sthenic plethora, the tone and extensibility are increased, in asthenic they are diminished. In the latter case, the heart and other organs are oppressed, instead of being excited by the quantity of blood. Local hyperæmia, or excess of blood in a part, when with diminished tension, constitutes congestion, or an accumulation of blood in the blood-vessels of a part, chiefly in the capillaries. There may also be increased motion & determination of blood to a part,—one of the most common causes of which is determination of blood to the head. The results of hyperæmia, general or local, when they reach a certain degree of intensity, are hemorrhage, fistula, dropsey; hemorrhage, when the vessels are distended to such a degree that their coats

Pea.

give way and blood is effused, flux, when there is an effusion of the watery part of the blood in secreting organs, or upon open surfaces, and dropsy when in closed sacs or in cellular connective tissue. There may also be too much blood in a part, with motion partially increased and partially diminished, constituting what is commonly known as induration, and characterized by redness, heat, pain, and swelling. Structural diseases are of various kinds; those of them that more particularly demand our notice are those which arise from alteration of the function of nutrition of the different structures. Those are comprehended under the heads of increased, diminished, or perverted nutrition. Increased nutrition, or hypertrophy, may affect either individual textures or whole organs, being in the former case simple in the latter complex. Diminished nutrition or atrophy, may be general, affecting all parts of the body, or partial, affecting only a part. Under perverted nutrition are comprehended all those changes of structural nutrition that go beyond mere *plus* and *minus* increase,—the quality of the fibre being altered, or new tissues, growths, or deposits formed in connection with the normal structure. Besides deposits and morbid growths of various kinds, there may be induration or softening, transformation or degeneration of texture. Many diseases arise from derangements in the mechanism of organs, from dilatation, contraction, laceration, displacements, contortion—(See Williams's 'Principles of Medicine').

Pea. (See PISUM.)

PEAR. (See PYRUS.)

PECTORAL, *pek' tōr'ēl* [Lat. *pectoralis*, from *pectus*, the breast], of or belonging to the breast, as pectoral medicines, those which relieve diseases of the chest, the pectoral muscles, major and minor, which are situated on the anterior part of the chest.

PEARL, ORANGE. (See AVANTHII CORTEX.)

PELLICULE. (See ANACYCLUS, PARITANIA.)

PELTIGERA, OR PELTIDA, *pel'ti-gē'ra*, *pel'ti-dā*, a gen. of lichens. *P. canina* and *repens* are known in herb-shops under the name of ground liverwort. This was formerly officinal in the London Pharmacopoeia and regarded as a specific for hydrocephalus.

PELVIS. (See ANATOMY, Osteology.)

PEPPERMINT. (See PEPSIN, CUBEBA, CHAVICA.)

PEPPERMINT. (See MINTS.)

PEPSIN, *pep'sin* [Gr. *pepsē*, I digest], a peptic albuminoid existing in the gastric juice, to which, in conjunction with the free acid, the solvent powers of that fluid seem owing. It has been lately extracted in large quantities from the gastric juice of the hog, sheep, and calf, and used in medicine as a digestive. That of the pig (*pepsin porci*) is stronger than any other, and is given in doses of 2 to 4 grains.

*PESTICULAE [Lat. *pestis*, I strain, or*

Peritoneum.

filter], a species of filtration employed in the making of tincture (which see). It is also sometimes applied to animal secretions, from the action of the glands being thought to resemble that of a strainer.

PERCUSION, *per-koo'shōn* [Lat. *cūcīo*, I strike, I strike], is the striking a part of the body in order to determine by the sound the condition of the subjacent organs. Every one knows that different kinds of substances, when struck, give out very different sounds. A wooden cask containing an oil is resonant when struck, fill it half full of water, and the lower part will render a flat sound, and the upper empty portion a hollow sound, less hollow, however, than when the vessel contained no water; fill it with water, and the whole is dull on percussion. It is the same with the human chest. If the blow fall over a portion of the healthy lung, you will produce a resonant or hollow sound, if the lung has lost its spongy character, or its place is supplied by some more solid or inelastic substance, —by fluid for example—you will hear a dead sound. Some nicely is necessary in the manner of striking the chest so as to properly elicit the sound, and various contrivances have been recommended for that purpose, but we believe that none of them are preferable to the fingers when properly used. One or two fingers of the left hand are to be laid flat on the part to be examined, and to be struck lightly, but rather smartly, with the ends of the three first fingers of the right hand, set close together on the same level. Percussion is also of use in determining the state of certain organs of the abdomen.

PERICARDIUM, *per-i-kar'dē-ūm* [Gr. *peri*, about, and *kardia*, the heart], is the membrane that encloses the heart (which see).

PERICARDITIS. (See HEART, DISEASES OF THE.)

PERIOSTEUM, *per-e os' te-ūm* [Gr. *peri*, and *osteon*, a bone], is the membrane that covels the bone (See BONES, ANATOMY).

PERISTALTIC, pe ri-stal'tik [Gr. *peristello*] I contract], is a term applied to that peculiar vermicular motion of the intestines by means of which their contents are carried onwards. It is a series of contractings and relaxings, the different parts of the bowels rising and falling alternately, so as to resemble the motions of a worm or snake.

PERITONEUM, *pe ri-to-ne'ūm* [Gr. *peritoneo*, I stretch round], is the thin serous membrane lining the abdominal cavity, and enveloping the contained organs, so as to keep them in their proper places. Like the other serous membranes, it is an enclosed sac, covering, but not containing, the organs in its cavity, with its internal surface smooth and shining, and moistened by a serous fluid for aiding the natural movements of the organs upon each other. The folds which surround the small intestines

Peritonitis.

constitute the *mesentery*: that which hangs down from the stomach, and is then reflected upwards and backwards to the colon, is the *omentum*.

PERITONITIS, or INFLAMMATION OF THE PERITONIUM, is an exceedingly painful and dangerous disease from its extent and connection with important organs. It may exist either as an acute or chronic disease. *Symptoms.*—In the former, there is usually great pain and tenderness of the abdomen, accompanied with fever, and a frequent, small, hard pulse. Sometimes, at first, the pain is confined to one spot; but it generally soon extends over the whole of the abdomen. It is very severe, and much increased by any motion, even coughing, sneezing, or drawing a long breath. Even the weight of the body-clothes is sometimes unbearable. It is acute and cutting, and sometimes occurs in paroxysms; and the patient usually lies on his back with his knees drawn up. The bowels are usually constipated, but sometimes the reverse; and commonly there are present nausea, vomiting, and hiccup.

Causes.—Its causes are various, as cold, mechanical injuries of the peritoneum, the development of tumours, &c. Women in childbed are peculiarly liable to it. After the disease has continued for a certain time, it is attended with tension and swelling of the belly; and if not checked, it usually terminates in from five to ten days. *Treatment.*—The treatment consists in the applications of warm fomentations to the abdomen, together with blisters or leeches, if necessary. General bleeding is sometimes recommended, but this can only be adopted or of service when the patient is strong and of full habit. As internal remedies, most reliance is usually placed upon mercury and opium. After a time, peritonitis sometimes assumes a chronic form. Here the symptoms are less marked. The pain is slight, or only discoverable on pressure, and the fever low; but the skin is hot and dry, the tongue foul, and appetite impaired. The treatment is local bleedings, with blisters and other counter-irritants applied over the abdomen. A nourishing but unstimulating diet, and attention to the state of the bowels, are likewise necessary; and some recommend iodine, either taken internally or applied as ointment to the part.

PERMANGANE ACID *per-ma-nan'-ik*, (*MnO₄*).—If a solution of manganate of potash be largely diluted with water, it gradually changes from green to violet, from the manganic acid passing to a higher stage of oxidation, and permanganate of potash is formed. It crystallizes in fine dark purple prisms, soluble in 16 parts of water, and forming a magnificent crimson solution. Permanganate of potash has lately received of most important application, in the hands of Mr. Condy, of Battersea, as a deodorizing

Pharmacopœia.

and disinfecting agent, and is known as *Condy's Disinfecting Fluid*. From the experiments of this gentleman, it seems to contain oxygen in the ozonic form, which is immediately liberated on the approach of organic matter in the process of decomposition.

PEAR, a vinous liquor made from pears in the same way as cyder is made from apples.

PERSPIRATION, per-spi-ra'-shæ [Lat. *perspirare*, from *perspirare*, I breathe through], is that watery vapour which is constantly passing off through the pores of the skin, and is distinguished into insensible and sensible; the former passing off in the form of invisible vapour; the latter being more profuse, and collecting in drops on the surface. In either form it is the same, consisting chiefly of water, with a small quantity of acetic acid, of muriate of soda, and potash, a small quantity of earthy phosphate, an atom of oxide of iron, and a trace of animal matter. It is calculated that about three pounds of water are daily conveyed to the surface of the body, as insensible perspiration, and this quantity is very considerably increased during violent exercise or in hot weather. Its expulsion from the system is very important; for whenever it is diminished or suspended, serious derangements may follow.

PERTUSSIS. (See HOOPING COUGH.)
PESTILENCE. (See PLAGUE.)

PETAL, *pet'-al* [Gr. *petalon*, Fr. *pétale*], a modified leaf, forming a part of the corolla. (See COROLLA, BOTANY.)

PETROSELINUM, pe-tro-se'-li-num [Gr. *petros*, a rock; *selinos*, parsley], a gen. of the nat. ord. *Umbellifera*. The species *P. sativum* is the common parley of our gardens, an herb which plays an important part in English cookery.

PHAGEMONIC, *fāg-e-mē-nik* [Gr. *phago*, I eat], is a term applied to ulcers that eat or destroy very rapidly.

PHALANGES, *fi-lān'-jez* [Gr. a battalion], the name given to the small bones of the fingers and toes. (See FOOT, HAND.)

PHANEROGAMIA. (See BOTANY.)

PHARMACOPŒIA, *far-mă-kop'-ē-ah* [Gr.], a book of directions for compounding medicines. This term is usually restricted to an authoritative work issued by a medical college, or other governing body, to secure uniformity in the preparations used by its members; the terms *dispensatory* and *formulary* being left for medical receipt-books which have not an authoritative character. The necessity for regulating the strength and purity of medicines has led to the adoption of Pharmacopœias by most civilized countries. In Great Britain we had till recently three national standards—the Pharmacopœias of the London, Edinburgh, and Dublin colleges; but by the Medical Act of 1858, section 54, it is enacted that the

Pharmacy.

General Council shall cause to be published under their direction a book containing a list of medicines and compounds and the manner of preparing them, together with true weights and measures by which they are to be prepared and mixed, and contain in such other matter and things relative thereto as the General Council shall think fit to be called "British Pharmacopœia." And the General Council shall cause to be altered amended, and republished such Pharmacopœia as often as they shall deem it necessary. By a subsequent act it is enacted that the "British Pharmacopœia," when published shall in all purposes be deemed to be substituted throughout Great Britain and Ireland for the several above mentioned Pharmacopœias (those that had hitherto been in use in England, Scotland and Ireland) and any Act of Parliament, order in council or custom relating to any such last mentioned Pharmacopœia shall be deemed after the publication of the British Pharmacopœia, to refer to such Pharmacopœia. The first edition of the "British Pharmacopœia" appeared in 1864, the second, very much altered and improved, in 1867.

PHARMACY, far' me-see [Gr. φαρμακεία medicament whethers salutary or poisonous] the art of preparing medicines for use in the treatment of disease. Of late years much has been done to raise the art by chemists and botanists of high standing. The modern pharmacopœias have been cleared of much empiricism, and chemicals of definite compositions are gradually replacing the crude and unscientific mixtures formerly prescribed. The practice of Pharmacy necessarily implies a thorough knowledge of all the characters both of genuine and adulterated drugs, a knowledge of the various methods of drying, and of mortifying from destructive influences the various substances used in medicine and a practical and familiar knowledge of all the mechanical and chemical operations which relate to the preparation of medicines. To describe in the briefest possible manner the various operations of pharmacy would require more space than we can afford to devote to a single article. We will merely note that the object of all those operations is to render medicines more agreeable, more convenient, more safe, and more efficacious than they are in their natural state. (See *Medical Mydica*.)

PHARYNGITIS (See CYANOSIS)

PHARYNX, far' inks [Gr. the throat, from φέρει, I convey, because it conveys food into the stomach], the muscular funnel-shaped bag at the back part of the mouth, which receives the masticated food, and conveys it to the oesophagus. It is broadest about the middle, being constricted at either end, more particularly below, where it terminates in the oesophagus.

PHASCOLUS, fas'ko-lus [Lat. phæcclus, a

Phosphuretted Hydrogen

little boat, from the form of the pods] a gen of the nat ord. Leguminosæ. The species are commonly known as kidney beans, scarlet-runners, and haricots. Most of these plants are climbers, the few which do not climb are called dwarf beans.

PHLEBOTOMY, or VENIPUNCTATION, fle-bot' o me, to-ne ak shun [Gr. φλέψ, a vein and τέμνω, to cut], is the opening of a vein for the purpose of taking away blood (see *Bleeding*.)

PHOSPHATE [Lat. phosphorus] is a salt formed by the union of phosphoric acid with a soluble base, as phosphate of lime, phosphate of ammonia &c (See *Phosphoric Acid*, and the several bases.)

PHOSPHORIC ACID, fos' for us is produced by the rapid combustion of phosphorus in oxygen or atmospheric air. When the oxygen is perfectly dry it is obtained as a mere white, flocculent but very deliquescent powder, burning when thrown into water, and fuming with it hydrated phosphoric acid. Diluted phosphoric acid is used in medicine as a tonic and refrigerant having similar properties to sulphuric acid. It is used to correct the phosphates in the urine, and is given with phosphate of lime in doses of 10 to 30 minims, largely diluted with water.

PHOSPHORUS, fos' for us [Gr. phosphorus], symbol P, equiv 32, sp. grav of vap 14.5, "Phosphorus is found in nature only in the state of combination, chiefly in the form of phosphates of lime which forms the principal constituent of animal phosphatite, & protophosphate. It exists in large proportions in the bodies of animals, in the blood, in the urine in the hair in the nervous tissues, & in the bones of which phosphate of lime forms a large constituent. Animals obtain the phosphate necessary for the formation of their tissues & from plants, in plants draw their supply from the soil. Phosphorus appears to be a very necessary ingredient in the brain and other centres of nervous action. Phosphorus is a soft wax, looking solid, burning in the air, and emitting white vapours having an alluvious odour. Its specific gravity is 1.83 at 55° Fahr. It fuses at 111.5°, and may be distilled unchanged, in close vessels, at 550°. It becomes luminous from slow combustion in dry air and frequently infames spontaneously. It may, however, be cut and handled with impunity under water. Phosphorus unites with oxygen in four proportions, forming oxide of phosphorus, hypophosphorous acid, phosphorous acid, and phosphoric acid. Hypophosphorous acid forms an uncrystallizable syrup, with feebly marked acid properties. It is interesting from forming a series of salts much used in medicine. A mixture of the hypophosphate of lime, soda and iron, is known in America as "chemical food."

PHOSPHURETTED HYDROGEN, fas' fo-ret hid. —There are three substances known under

Phrenitis.

this name, having the following formulæ— P_2H (solid), PH_3 (liquid), and PH_5 (gaseous). The last only need be noticed. It may be obtained by boiling fragments of phosphorus in milk of lime heated in a flask to which a delivery-tube is attached. As soon as the gas escapes, it inflames spontaneously in the air and may be collected over water.

Phrenitis., *frē-nītēs* [L. *phren*, from *phren*, the mind] is inflammation of the brain, or any of its membranes. (See BRAIN, DISEASES OF THE.) The term *phren* or *lunatic* was anciently applied to the deranged as being the supposed seat of the soul. From the same root we have the term *craze*.

Phthisis, or CONSUMPTION *fi-thēz* [*Gr. φθισις* *I consume*] is a disease which unfortunately is not too prevalent and fatal in this country as in most others, though I hope, there is no country where its invasions are so great as in England. It pines neither age nor sex and its attacks it first so gradually as almost to escape notice but to its gradual lead to a fatal issue. It is the result of the formation and development of tubercles in the lungs. These first appear in the form of small grey semi-transparent pannulations which gradually enlarge and become opaque and after a time empty themselves into the bronchial tubes and thus the tubercles of the lung is gradually destroyed. —The causes of this disease are divided into remote and exciting. Of the former the most important is hereditary predisposition. It is not however an actual cause of the disease and here there are many cases in which the children of consumptives do not fall a prey to this disease, but it renders those who are in that condition much more liable to be affected by the exciting causes. Whatever weakens the strength of the system or interferes with the oxygenation of the blood tends to the production of this disease. Hence living in bad air insufficient and unwholesome food, and sedentary pursuits tend to it. Among the more exciting causes are exposure to cold or damp, especially after the body has been heated, intemperance of any kind, profuse evacuations, and exposure to the reception of dust into the lungs, as in the case of certain artificers, needle pointers, stone cutters, and the like. **Symptoms**.—The earliest symptom of consumption that usually manifests itself is a short, dry cough, exciting no particular attention, being attributed to a slight cold. It, however, continues, and after a time increases in frequency. The breathing is more easily hurried by bodily motion, and the pulse becomes more frequent particularly after meals and towards evening. Towards evening there is also frequently experienced a slight degree of chilliness, followed by heat and nocturnal perspirations. The patient

Phthisis.

becomes languid and indolent, and gradually loses strength. After a time the cough becomes more frequent, and is particularly troublesome during the night, accompanied by an expectoration of a clear, frothy substance, which afterwards becomes more copious, viscid, and opaque, and is most considerable in the morning, the sputa are often tinged with blood, or haemoptysis occurs in a more marked form, and to a greater extent. As the disease advances, the breathing and pulse become more hurried, the fever is greater, and the perspirations more regular and profuse. The emaciation and weakness go on increasing, a jar is felt in some part of the thorax, which is increased by coughing and sometimes becomes so acute as to prevent the patient from lying on the affected side. All the symptoms increase towards evening, the face is flushed, the palms of the hands and soles of the feet are affected with a burning heat, the feet and ankles begin to swell and in the last stage of consumption there is nearly always profuse diarrhoea. The emaciation is extreme, the countenance assumes a cadaverous appearance, the cheeks are prominent, the eyes hollow and languid. The appetite remains until the end, and the patient dictates himself with the hope of a speedy recovery, often vainly forming distant projects of interest or amusement, when death puts a period to his existence. Tubercular deposits are also usually found in other organs of the body, the liver is enlarged and changes in appearance, and ulcerations occur in the intestine, the larynx, and trachea. These are so frequent and uniform as to lead to the belief that they form part of the disease. **Treatment**.—It is of the utmost importance to be able to meet and counteract the earliest approach of this disease. The constitutions that are most liable to its attack are generally characterized either by a fair, delicate, complexion, fair hair, clear skin and great sensibility, or by dark complexion, large features, thick and sallow skin and heavy general expression. The development of the disease is preceded by a peculiar form of indigestion, known as "strimous dyspepsia." It is specially characterized by a distaste of fatty food, sometimes also of sugar and alcohol, and is accompanied with heartburn and acid eructations after taking food. Unlike inflammation tubercles almost invariably commence at the spine of the lungs, and it is here that they are naturally most advanced. It is here, then, that the skilful physician, by means of auscultation and percussion, (which two), is able to detect the first direct symptoms of the incipient disease. The treatment of this disease is of two kinds,—the one directed to strengthening the system for its prevention in those predisposed to it, or overcoming it in its incipient stages; the other to arrest-

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ing its progress after the tubercles have manifested themselves. The former class comprises a proper attention to the digestive organs, with wholesome diet, exercise in the open air, regular habits, attention to the skin, and, if necessary, change of air. The diet should be nutritious but not stimulant and the exercise not violent or too prolonged. Sea voyages, or residence at the sea side, are generally found to be very beneficial, and, as a general rule, those places that are least subject to variations of temperature are recommended. In this country, Hastings, Torquay, and the Isle of Wight, abroad Madeira, Nice, Algeria, are the places chiefly recommended to consumptive patients. The practice, however, of sending patients in the last stage of consumption to a foreign country cannot be too strongly reprobated. Of the more directly curative remedies unquestionably the most valuable is cod-liver oil. It should be taken in small quantities at first, probably a teaspoonful three times a day, during or immediately after meals, and the effect is greatly to improve the appearance of the patient, and to counteract the progress of the disease. If taken early, the tuberculous deposit may be arrested, and the patient restored to a state of health, and even where this is not the case the progress of the disease will at least be retarded. Tonic medicines, such as bark, sarsaparilla, iron, and iodine, are also very beneficial in the treatment of phthisis, at least in those cases where inflammation or much febrile excitement does not exist. Where inflammation already exists it may be subdued by counter-irritants to the upper parts of the chest. These are the general remedies to be employed; the more prominent special features of the disease require particular medicines. One of the most distressing and harassing of these is the cough, which may be alleviated by the application of fumigations or stimulating plasters to the chest or by the internal use of mucilaginous mixtures, squills, comum, opium, ether &c. The night perspirations, when very copious, are best checked by the use of mineral acids as sulphuric acid given with quinine, or nitric acid in a decoction of sarsaparilla. Diarrhoea commonly subsides by a strict regulation of the diet, and the avoidance of all stimulating food and medicine, otherwise small doses of chalk and opium or rhubarb and opium, may be administered. When the pulse is very frequent and the palpitation distressing, digitalis may be used. (See Heartburn, for the treatment of that symptom.) The duration of this disease depends upon a great variety of circumstances, and varies from a few months up to four, five, or more years, the average, however, may be taken at about two years but many of the cases terminate fatally between the fourth and ninth month. The question as to whether phthisis be con-

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tagious has often been discussed, and medical men are by no means unanimous on the subject. The majority are probably in favour of its being non-contagious, though there are not wanting weight and number on the other side, to which, indeed, the present writer believes that he has had evidence for adhering. At all events, a convalescent patient after the disease has fully manifested itself

PHYSICIAN, *physikos* [Gr *phusein*, from *phusis*, nature], originally denoted a natural philosopher, one who investigated the laws and operations of nature but it is now applied exclusively to those who practise the art of healing, called in Greek *iatros*, and in Latin *medicus*. Among all nations, the healing art is practised by the priests, as was the case among the early Egyptians and Greeks. Among the latter, however, medicine soon rose to the rank of a distinct science, and its practitioners were highly honoured and well remunerated. In the earlier days of Roman medicine, like all the liberal arts, was despised and its practice confined to slaves and persons of inferior station, and it was only after the Greek arts and letters were cultivated at Rome that physicians obtained a more honourable standing. In the general barbarism which followed the fall of the Roman empire medicine, as a science was completely lost. Internal medicine seems to be practised exclusively by the clergy, and as they were forbidden to shed blood, operative surgery fell into the hands of an inferior class, the barbers-surgeons. In the third year of Henry VIII (1509) an act was passed "for the appointing of physicians and surgeons," in which, after reciting the inconveniences and grievous hurt damage, and destruction of many of the king's liege people, for as much as common physicians, as smiths and weavers and women boldly take upon them practices in which they partly use sorcery and witchcraft, it is enacted that no physician within the city of London nor within seven miles of the same, shall take upon him to exercise or occupy, as a physician, except he be first examined approved and admitted by the Bishop of London or by the Dean of St Paul's for the time being, calling to him or their four doctors of physic, or beyond these limits without leave from the Bishop of the diocese, or his vicar general, similarly assented. It further provided that neither this act nor anything therein contained be prejudicial to the universities of Oxford and Cambridge, or either of them or to any privileges granted to them. In 1522 another act was passed, by which the examination of physicians was taken from the persons appointed, for that purpose by the former College and reposed in the newly constituted College of Physicians. In 1538 a new medical act was passed for consolidating

Physicians, Royal College of

the various medical corporations of the United Kingdom, and enabling persons purveying medical aid to distinguish qualified and unqualified practitioners. The General Council consists of one person chosen from time to time by the various universities, the Royal Colleges of Physicians and Surgeons of London, Edinburgh, and Dublin Act, and six persons nominated by the Queen in council, four for England, one in Scotland, and one for Ireland, and a president to be elected by the General Council. The Council appoints a registrar, who acts as secretary and treasurer. Branch councils are also appointed for Scotland and Ireland who have each a registrar and other officers and clerks. Every person registered under this act is entitled to practise medicine and surgery, or medicine or surgery as the case may be, according to his qualification or qualifications, in any part of her Majesty's dominions, and to demand and recover in any court of law, with full costs of suit, reasonable charges for professional aid, advice, and visits and the cost of any medicines, or other medical or surgical appliances, rendered or supplied by him to his patients. None but registered persons can recover damages in any court of law, nor can any unregistered person hold any public appointment as medical officer. A correct register of the names and addresses of qualified practitioners is published annually.

PHYSICIANS, ROYAL COLLEGE OF In the tenth year of Henry VIII a royal charter was granted for erecting a corporation of physicians in London which was confirmed by 14 and 15 Henry VIII c 5. In virtue of such act and charter, a perpetual College of Physicians was established with a consti-
tution of eight electors, of whom one was to be annually elected president, and it was ordained that this college should choose four physicians annually, to superintend all others within London and seven miles thereof, "as also their medicines and receipts," and that no person should be admitted to practise within that circle, except by the licence of the college, under the penalty of £5 per month, also all persons were forbidden to practise even beyond that circle unless they should have been first examined and approved by the president and three electors, or should be graduates of Oxford or Cambridge, but certain charters and acts of parliament extended and confirmed the privilege of this body. The constituted officers of the college are the eight electors, one of whom is president, and the four censors or governors. The examiners for membership are the president and censors. The government of the corporation is vested in the president and fellows only, and the members of the college are alone eligible to the fellowship. The examination for membership takes place four times a year. All persons who have been

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admitted as licentiates, or extra-licentiates of the college, are entitled to be admitted members of the college, provided they have obeyed the bye-laws, and do accept such membership according to the bye-laws. Every candidate for membership is required to be at least twenty five years of age to have been engaged during five years in the study of medicine at some recognized college or school, and to produce satisfactory evidence of having studied the necessary branches. No candidate can be admitted to examination who is engaged in trade or dispenses medical or is under engagement with any chemist for the supply of medicine, &c., nor who uses for the sake of gain any remedy which he keeps secret. The examinations are both *oral* and *written*. The fee for membership is £11 for. Every candidate for the college licence is required to be of one and twenty years of age, or more, married, and produce certificate of having studied medicine for four years at some recognized medical school and to have passed a preliminary examination in general education. The examination extends over various branches of a medical education, and the fee for licence is £15 15s. The Medical Act of 1858 has considerably modified the position and character of the college, by giving the right to practise, according to their qualifications, to all practitioners registered under the act, thus abolishing the exclusive privilege of the institution. (See *Fellow and Provincial Medical Directory*)

PHYSIOLOGY, phiz-eol'-o-je [Gr. *phusein*, to move and *logos*, discourse], is literally the doctrine or science of nature, comprehending a knowledge of all the physical and natural sciences, and this is the meaning which it originally bore. But as these, in course of time, came to be more particularly studied, they received distinct names, as natural philosophy, chemistry, astronomy, zoology, geology, &c. To the science which treats of the functions of living beings the term physiology is still applied, though its meaning is becoming more and more restricted as its various branches become better defined. By physiology, as at present used, is generally understood a knowledge of vital actions in a state of health, as distinguished from pathology, which is a knowledge of the same functions when diseased. It is generally considered to embrace a description of the various vital functions of the parts composing the human body, as well as the more intimate functions of the parts themselves, the relations of these parts to each other being referred to descriptive anatomy, and their chemical composition to animal chemistry. The elementary science of *physiology* deals with the elementary textures of the human body, and their several functions, and is the recognized basis of physiological knowledge. The ultimate or elementary tissues are si-

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ranged as (1) minute tissues (2) cell tissue, (3) fibre-tissue, and (4) tube tissues. Molecules are minute bodies, presenting to the microscope the appearance of minute dots or points. All fluids out of which the higher tissues are formed are rich in molecules. When we examine living structures under high magnifying power, numerous tissues, but especially the fluids, are seen to contain multitudes of minute vesicles, or shut ves., termed cells, which vary greatly in shape, size, and function and are distinguished into permanent cells and cells of transition. Cells undergo a variety of changes, sometimes they gradually dissolve and perish or the cell wall bursts and liberates its fluid contents, and they unite in various ways to form complex tissues. A fibro is a solid elongated body like a thread varying in thickness from $\frac{1}{10}$ to $\frac{1}{100}$ of an inch. The functions of the fibrous tissues are mainly the most important however is that of contractility. The tubular tissues are distinguished from fibres by being composed of distinct walls with contents as in the nerve tubes in the blood tube or capillaries. One of the four great elementary units of living beings, on which depend the vital elements of growth, contractility and sensibility. Organized beings present us with only twenty of the sixty two elementary substances known in chemistry, and of those the principal are oxygen, hydrogen, carbon and nitrogen, the others being found only in small quantities and in particular tissues. The chemical principles that are to be found more or less, are interlocked together in every tissue and fluid of living beings, some prevailing in one other in another, viz (1) the albuminous (2) the fatty (3) the pigment (4) the mineral principles. The albuminous principle consists of albumen, fibrin, and connective tissue matter consists of carbon, hydrogen and oxygen, in various proportions. The primary principles give colour to the various textures and are evidently allied to oily constituents of living beings. Of mineral principles, the most important are carbonate and phosphate of lime. The various functions of the more complex organs of the human body are distinguished as those of nutrition, excretion, and reproduction. The function of nutrition consists of five stages—(1) the introduction into the stomach and intestinal canal of appropriate aliment, (2) the formation therefrom of a nutritive principle the blood, (3) the transformation of the nutritive qualities of the blood into the tissues, (4) the reabsorption of the transformed tissues into the blood, (5) the excretion of the various excretive matters from the body. The subject of appropriate alimentary matters is treated under the heads Food and Drink. The digestive processes— including mastication, or the chow-

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mer of the food, in salivation, the mixing of it with saliva, digestion, or the swallowing of it chymification, or the action of the stomach, chylification, or the action of the intestines, and the absorption of the chyle—are treated of under the head of Digestion. The chyle in the intestine is taken up by the lacteals, and by them conveyed to the mesenteric glands, where it is supposed to undergo some change. From thence it makes its way to the right side of the aorta in the lumbar region, where it is finally discharged into an elongated pouch, called the receptaculum chyle. In this pouch the thoracic duct conveys the chyle upwards to the left side of the neck, where it is poured into the left subclavian vein at its junction with the internal jugular, and being thus mixed with venous blood is carried to the lungs and thence converted into arterial blood. The circulation is carried on by means of the heart arteries veins, and capillaries. The blood is propell'd by the heart through the arteries to all parts of the body, and in the extremities of the arteries it is taken by the capillaries to the extremities of the veins by means of which it returns again to the heart (see Circulation). The impure blood, carried by the heart by its propulsive force to the lungs, where it purifies by being exposed to the action of the air and is then conveyed to the heart for circulation throughout the body. The lungs do not constitute part of the circulatory system, since covered with capillary blood vessels to the action of the atmosphere (See Respiration). We thus see how nutritive materials are converted into blood, and how the blood circulates through all parts of the body. It is from the blood that all the different tissues derive their nutriment, each possessing a vital property of attraction and selection, whereby the necessary materials are drawn through the delicate membranes walls of the capillaries and converted into tissue. Hence a sufficient supply of nutritious blood is necessary to health depending as it does upon the various processes of digestion, circulation, respiration, &c and also a healthy state of the parts to be nourished so as to be able to attract and select the proper materials. A healthy state of the body is by this also necessary, for on this too, the various functions of the body depend. While the blood is constantly supplying matter to build up the various tissues, it is also, at the same time receiving from these tissues the matter which has fulfilled its appointed functions. The new material takes exactly the place of the old, so that the general configuration of the body is preserved. The blood is thus a wonderfully complex fluid, made up partly of organic materials derived from the alimentary canal, and partly of organic materials derived from the tissues (See Blood). The latter are carried to var-

Physostigma.

in the excretory organs, where they are secreted and discharged, as by the intestinal, kidney, skin, lungs, and liver. The function of excretion is dependent on the brain, spinal cord, and nerves. (See BRAIN, NERVOUS SYSTEM, SPINAL CORD.) The third and last of these functions is that of reproduction, a subject of much interest but comparatively little understood. It is said that the human fetus passes through various stages of growth resembling in turn the different inferior beings of the animal kingdom, at first a zoophyte, then a mollusk, then a worm, a fish, a reptile, and so on; some however regard this theory as being too fanciful theoretical, and founded mainly upon analogy. (See BUNNELL'S "Outlines of Human Anatomy," HENRY'S "Handbook of Physiology," CARPENTER'S "Human Physiology.")

Physostigma, phis'to me [Gr. *phuse*, a vein, and *stigma*, a sharp point] a genus of the nat. ord. Leguminosæ. The species *P. venenosum* produces the Club root disease, so called from being as it is a parasitic or lead to disease in the root or unrooted of affected plants. It possesses in a remarkable degree the power of contracting the pupil of the eye and thus effects in the continuity of those produced by belladonna. It is of considerable place in the list of the British Pharmacopeia. The extract is given in doses of $\frac{1}{2}$ to $\frac{1}{4}$ of a grain, but it is usually employed externally.

Phiz Mazzii [L.] a porous nodule is the name given to the maculae of the three investing membranes of the brain. (See BRAIN.)

Phizzi [Lat. *the margin*] is a depilatory with a strong desire for natural oil. It is very common as a component of various perfumes, chinis, &c.

Picea v. or **Picea p i c e a m i l t i f f i** [Gr. *pistis*, pitch] a genus of the nat. ord. Coniferae. The species *P. abies* a native of Northern, yield the common pitchwood of the Maltese Islands. It is much used as a tonic, astringent, and stomachic and is said to be largely employed by domestic brewers, as a substitute for hops. The infusion is prepared by infusing 60 grains of the chips for half an hour in two ounces of cold distilled water, and 1 ounce, dose, 1 to 2 ounces. This is equal to it for its properties. The tincture is formed by macerating for 7 days in a closed vessel, 1 ounce of the chips in one pint of proof spirit and straining, dose $\frac{1}{2}$ to 2 drachms. Dose of extract, 3 to 5 grains.

Pigment, pi'g'ment [Lat. *pigmentum*] is a name given to the mucous substance which covers the surface of the iris, and gives it its beautiful variety of colors, also the black or brownish mucus which covers the anterior surface of the choroid membrane contiguous to the retina and the interior surface of the ciliary processes. (See EYE.)

Pityriasis.

Pitta (See HAIRBODIES)

Pith [Lat. *pithus*] a very convenient form of administering medicines, particularly such as are nauseous in their flavour, or actively active in their properties. The ingredients are first finely powdered, and then well mixed together with some tenacious liquid to a proper consistency after which the mass is put into a drinking glass by which it is divided and rolled into pills.

PIMPINELLA, pam pi'mel la, a gen. of Umbelliferae. The species *P. anuum* is the anise. (See ANISE.)

Pintle (See ACNE.)

Pinnate Gland (See BRAIN.)

Pintle (See ASTRAGALUS, WILIGHTS AND MELANCHOLIA.)

Piper, pi'per [from Gr. *pepo*, I digest, because of its stimulating qualities], the typical gen. of the nat. ord. Piperaceæ. The dried ripe fruits of *P. nigrum*, the poppy-pepper, constitute the black pepper of the shops. White pepper is the same fruit in a peeled state deprived of its external pulpy covering. The former is the more pungent and acid. Both kinds of pepper are extensively employed as condiments, and medicinally as stomachic stimulants and correctives. Dose, from 5 to 20 grains. The extraction of pepper is 3 ounces of black pepper in fine powder, 3 ounces of raw wine in fine powder, and 2 ounces of clarified butter. It is given in doses of 1 to 2 drachms two or three times a day.

Pipra pi'pra [Lat.] the pea, a gen. of the nat. ord. Leguminosæ. The species *P. sativum* is the common pea, the most valuable of cultivated legumes. Like most domestic plants of like in quality, its native country is unknown though it is commonly referred to the South of Europe. The different varieties of the garden pea and the grey pea, which is cultivated in fields, are all regarded as varieties of *P. sativum*.

Pitch, Burgham, 14 a viscous exudation from the spine fir (*Abies alba*), melted and strained. It is imported from Switzerland.

Pitch Paster, or Burgham Pitch Paste is made by melting together Burgham pitch, 20 ounces, common frankincense, 12 ounces, resin, $\frac{1}{2}$ ounces, yellow wax, 4 $\frac{1}{2}$ ounces, then add expressed oil of nutmeg, 1 ounce, olive oil, 1 ounce, water, 2 ounces, stir and evaporate to proper consistency. It is warm and rubefacient, applied to the chest in chronic pulmonary complaints, to the loins in rheumatism, &c.

Pituitary Membrane [Lat. *pituita*, phlegm] is the membrane lining of the cavities of the nose. (See DANDRIFI.)

Plx-

PIC or PITCH (See Pitch.)

PLAGUE, *plague* [Gr. *plagia*, a stroke], a contagious fever, generally of a very severe kind, rapid in its progress and accompanied by buboes, carbuncles, and pustules. It spreads rapidly by contact and is usually fatal to two-thirds of those whom it attacks. **Symptoms**—The first symptoms are headache in the fore and hind parts of the head; some times accompanied by violent and short terrors, alternating with heat. The eyes become red and assume a ferocious aspect, the headache increases, and the pain extends to the spine, the joints and the limbs. Then follow vertigo and delirium, at first mild, but afterwards fierce. The tongue is dry and yellowish but without thirst. There are nausea, with ineffectual attempts in most cases, to vomit or if anything is brought up, it is green bile. The respiration is laborious, with general unconsciousness. There is nothing particular in the salivary excretions although they are sometimes fluid. The urine is often turbid with an oily aspect. The smell of the patient is occasionally nauseous but if the disease has lasted a few days the perspiration is often a sweatish, disagreeable odour. The disease varies in duration from three to seven days, but the patient often dies within a few hours of the attack. **Treatment**—The medical treatment of the plague has hitherto been of an empirical character, no treatment attempted having been proved of real use. In the French army at Jaffa bark tamarind coffee and camphor were employed as well as sudorifics, & nitro and iatro but with out success. It has been asserted that bleeding and purgatives are of great efficacy but it is known that in many cases they have proved utterly ineffectual. Sweating the use of cold water and oil have in turns been loudly advocated as remedies for this disease but apparently on the very vaguest grounds. The plague is of Egyptian origin the great plague of Athens which took place 430 B.C. and which is the first instance on record of its appearance in Europe, having been imported into that country. Its first introduction into modern Europe was by means of the crusades and since then it has appeared in various places, but always imported from some part or other of the Turkish empire. It has frequently appeared in London, where, in 1665 it destroyed, on the smallest calculation 68,000 inhabitants, but since that year, quarantine laws, added to many improvements in the state of society have protected Great Britain from all malignant visitations.

PLasters are a class of medicinal agents, employed externally, to answer various purposes; some are formed of soft and bland materials, and used simply as coverings; sores or abraded surfaces to protect them from the action of the air, and to support the parts, others contain acid and

Pleuritis.

stimulating substances, and operate as rubefacients or blisters. Plasters should not adhere to the hand when cold, but should be adhesive at the ordinary temperature of the body. They are generally kept in rolls, and when they are to be used, are melted and spread on leather, calico, linen, or silk. 1

PULMOR, *plathora* [Gr. *pλθωρα*, *pλ-*
-*μνη*] was by older medical writers
employed to signify a superabundance of the
fluids of the body but as now used,
to express a redundancy of blood.

PLAURA [Gr.], the name given to the mucous membrane which lines the internal surface of the trachea and covers its viscera. (See LUNGS.)

Pleuritis or Pleurisy, *pi'loōrēz*, *pi'loōrēz* in *re-*
se [Gr. *gleuron* the side] is inflammation of the
pleura, or investing membrane of the
lungs. Among the causes of pleurisy the more common are exposure to cold, es-
pecially after violent exercise, blows on the
chest fracture of the ribs, tubercle in the
lungs. It is most prevalent in winter and,
next to it in autumn. Old persons are
most subject to it, but it may occur at any
period of life. *Symptoms.* It is usually distin-
guished as acute and chronic. The former
is usually accompanied with chills, rigors and
the ordinary symptoms of inflammatory
fever, accompanied or followed by a sense of
weight in the chest, which in a few hours
becomes acute pain, usually referred to a
point directly below the nipple. There is
also generally a short dry cough and the
breathing is frequent, short and anxious;
the pain being increased by a deep inspira-
tion; in the acute stage somnolent, the pa-
tient can only lie upon the affected
side and sometimes upon the opposite one,
but it usually prefers lying upon his back.
The pulse is frequent and lead skin hot,
cheeks flushed, urine scanty and high-
coloured and tongue white. These sym-
ptoms are not always so well marked and
the pain is sometimes more diffuse and less
severe. In most cases the acute pain as
well as the fever subsides on the third or
fourth day and the cough and difficulty of
breathing abate, though the pleura still con-
tinue in a state of inflammation. By means
of auscultation and percussion, the nature
of this disease can be much more accurately
determined than formerly. The respiratory

determined on in formerly. The respiratory movement at normal will be found to be diminished and sounds of friction will accompany the motions of respiration. Dulness on percussion will be first heard in the most dependent part of the chest, afterwards gradually extending over the side affected. *Treatment* — In the treatment of this disease the object is to reduce the local inflammation and prevent effusion. Hot and moist linseed poultices or poppy-head fomentations should be applied to the chest, the diet should be light and unstimulating, and purgative should be administered. Blood-letting is not now generally recommended.

Plum.

or practised, and should only be had recourse to in severe cases, and then only locally, by means of leeches or cupping-glasses. In chronic pleuritis the symptoms are usually those of the acute form in a mitigated state. It may succeed the acute, or it may come on gradually without any of the more marked terrors of that disease. There is usually more or less of fever, an acceleration of the pulse, emaciation, difficulty or hurry of breathing, increased by exertion, more or less of pain or soreness, and inability to lie on the healthy side. The treatment of this form of the disease differs from that of the other, the object being to promote the absorption of the effused matter, and also to support the patient's strength. For promoting the absorption of the effused fluid, as well as for preventing its further secretion, counter-irritants are used, as blisters, eruption liniments, tincture of iodine: the last painted over the part, or exhibited internally, will be found to act very beneficially in removing the effusion. The general health is to be improved by a nutritious but not heating or stimulating diet, and by the cautious administration of such tonics as the strength of the patient is able to bear. Change of air will often be found to act most beneficially in such cases, and is frequently efficacious when most other remedies have failed. Failing other means, recourse is sometimes had to the operation of *paracentesis thoracis*, or tapping the thorax, for setting free the effused matter; but the operation is attended with considerable danger and is rarely productive of more than a temporary relief.

PLUM. (See PRUNUS.)

PLUMBUM. (See LEAD.)

PLUMMER'S PILL is the same as the compound pill of the subchloride of mercury. (See MERCURY.)

PNEUMONIA, or PNEUMONITIS, *nu-mo'-ne-a, nu-mo-nit'-is* [Gr. *pneumon*, the lung], is inflammation of the substance of the lungs. It may be occasioned by any of the causes which produce inflammation in general,—variations of temperature, the application of cold, violent exercises of the body, exertions of voice, &c. It occurs most frequently in the winter and spring months. *Characteristics.*—It is characterised by fever, difficulty of breathing, cough, dryness of the skin, heat, anxiety, thirst, and a sense of weight and pain in the chest. The pain is dull, deep-seated, and rarely acute, unless the pleura be likewise affected. At first the cough is frequently dry, and without expectoration; but after one or two days matter is brought up, viscid and rusty-coloured, and often streaked with blood. In favourable cases, this disease may decline on the third or fourth day, but more frequently it is protracted to ten days or a fortnight. In unfavourable cases the symptoms increase on the third or fourth day, and become more

Poison.

and more aggravated, until at length the patient dies, exhausted or asphyxiated. A high degree of fever, attended with delirium, great difficulty of breathing, acute pain and dry cough, denote great danger; while, on the contrary, an abatement of the febrile symptoms and of the difficulty of breathing and pain, taking place on the coming on of a free expectoration, or other critical evacuation, promise fair for recovery. *Treatment.*—Linseed poultices or poppy-head fomentations should be applied to the chest; a dose of castor-oil should also be given; the diet should be light and unstimulating, and the patient kept perfectly quiet in bed, the air of the room being kept moist by the evaporation of boiling water, while the temperature is maintained at about 55° Fahr. Blood-letting, which was formerly so common, is not now generally recommended in this disease. If the patient be weak, it may be necessary to support his strength, by means of moderate quantities of wine or brandy. During convalescence, or after suppuration, tonic medicines, and a nourishing but not stimulating diet, are necessary to support the strength of the patient.

PODOPHYLLUM, *pod-o-fil'-lum* [Gr. *pous*, a foot; *phyllos*, a leaf—from the shape of its leaf], a gen. of the nat. ord. *Ranunculaceæ*, or, according to American botanists, of a distinct order termed *Podophyllaceæ*. *P. peltatum*, the May-apple, or wild-lemon, is a common herb throughout the American States. Lately, this plant has attracted much attention, in consequence of the discovery of its active resinous principle, which is now coming into use as a cathartic, and as a therapeutic substitute for mercury. The resin of podophyllum is the form of this medicine commonly employed; and the dose is from $\frac{1}{2}$ to 2 grains.

POISON, *poz'-zon* [Fr.], is any substance which, when administered in small quantities, is capable of acting deleteriously on the body. In general language, however, the term is applied to those substances only which destroy life in small doses. In medical jurisprudence it is found very difficult to lay down the exact boundary-line between medicines and poisons. Dr. Taylor suggests the following definition:—"A poison is a substance which, when absorbed into the blood, is capable of seriously affecting health, or of destroying life." Some poisons act in the form of gases or vapours through the lungs; others are solid or liquid, and reach the blood through the stomach or bowels, or through the skin or a wound. The law, however, never regards the matter in which the substance administered acts. If it be capable of destroying life, or injuring the health of an individual, it is of little consequence, so far as the responsibility of a prisoner is concerned, whether the action on the body be of a mechanical or a chemical nature. Poisons have been divided into

Polygala.

three classes, according to their mode of action on the system; namely, irritants, anaesthetics, and narcotic-irritants. The narcotics and narcotic-irritants may, however, be regarded as one large class—the nervous, as their special action is to affect directly one or more parts of the nervous system. Narcotic poisons can also be subdivided into cerebral, spinal, and cerebro-spinal, according to whether the substance affects directly the brain, the spinal marrow, or both of these organs. Irritant poisons, when taken in small doses, speedily occasion violent vomiting and purging. These symptoms are either accompanied or followed by intense pain in the abdomen. As their natural supplies, their action is to irritate and injure. Many substances belonging to this class of poisons possess corrosive properties; such as the strong mineral acids, caustic alkalies, bromine, corrosive sublimate, and others. Some irritants do not possess any corrosive action; such as arsenic, the poisonous salts of baryta, carbonate of lead, cantharides, &c., which are called pure irritants; they exert no destructive chemical action on the tissues, they simply irritate them. In almost all cases of poisoning, the stomach should be evacuated, as early as possible, either by emetics or the stomach-pump. The vomiting should be kept up, and the stomach well washed out with bland liquids, as milk and water, or barley-water, and after the vomiting a brisk purgative may be administered. Exhaustion or nervous irritability may be allayed by ether, opium, chloral, wine, or brandy. Vomiting may in general be produced by swallowing a cupful of warm water mixed with a teaspoonful of flour of mustard. With corrosive poisons, however, it is not always safe to employ emetics. Sometimes viscid substances are employed to protect the coats of the stomach, and involve the poison. In some cases, irritation is to be allayed and inflammation subdued; in others, moderate stimulants are necessary. With the poisonous gases, fresh air is essential, and cold diffusion useful.

POLYGALA, *po-lyg'-d-la* [Gr. *polus*, much; *gala*, milk], the typical gen. of the nat. ord. *Polygalaceæ*. The species *P. vulgaris*, the common milkwort, is an inconspicuous but beautiful plant, with blue, pink, or white flowers, found in our dry pastures and pasty fens. This and many other species have bitter properties, and have been used medicinally as tonics, stimulants, diaphoretic, &c. *P. Senega*, the Seneca snakeroot, is a valuable drug, and is officinal in this country, being used either in large doses as an emetic and cathartic, or in small doses as an expectorant, diaphoretic, diuretic, and emmenagogue. It is chiefly used in coughs. The infusion ($\frac{1}{2}$ oz. of the root bruised to $\frac{1}{2}$ fluid oz. of boiling distilled water) is given in doses of $\frac{1}{2}$ to $\frac{1}{4}$ a fluid oz. The tincture

Potash.

($\frac{1}{2}$ oz. of the root incense powder to 1 pint of proof spirit); dose, $\frac{1}{2}$ to a fluid drachm.

Polygonum, *po-lyg'-o-num* [Gr. *polus*, many; *gony*, joint; it has many joints or knots], the typical gen. of the nat. ord. *Polygonaceæ*. The roots of *P. bistorta*, commonly called bistort-root, are a powerful astringent.

Potrosus, *po-tro'-süs*, a gen. of Fungi. From various species, *Amadou* or German tinder is obtained. *P. officinale*, the larch, or white agaric, has been employed medically, externally as an astringent application, and internally to check perspiration, also as an emetic and carthartic. (See *AMADOU*.)

POLYXUS [Gr. *polus*, many, and *pōs*, a foot] is a tumour most commonly met with in the nose or uterus; and so called from an erroneous idea that it had a number of roots or feet. They arise from different causes, and vary with the cause by which they are produced. Sometimes they are hard and unyielding; at other times, so soft as to bleed with the least touch. They sometimes grow to a great size; and when in the nose often interfere seriously with the breathing. In such cases, an operation is necessary, in order to remove them.

POMERANIA. (See *PUNICA*.)

Populus, *pop'-u-lus*, in Bot., the Poplar, a gen. of the nat. ord. *Salicaceæ*. Several species have tonic, astringent, and febrifugal bark, containing the active principle *salicin*.

Pores, a term applied to the minute holes or openings of the skin. The porosity of the human skin is of such a character that it has been calculated that there are a thousand holes, or pores, in the length of an inch. The whole surface of the body of a middle-sized man being estimated at sixteen square feet, it must contain no fewer than 2,304,000 pores.

Potito. (See *Risaworm*.)

PORTER. (See *A.R.*.)

POTASH, *POTASSA*, *pot'-ash*, *po-tash'-ed* [KO].—Anhydrous potash is a hard grey solid, fusible at a red heat, and convertible into vapour at a high temperature. When thrown into water, it seizes an equivalent of that substance with such violence as to become red-hot during the process. Its hydrate, ordinary caustic potash, KO.HC, is a compound of very great importance. When perfectly pure, it is a hard white solid, and is generally met with in commerce in the form of cast sticks. It fuses at a red heat, and rises in vapour if the temperature be raised. The water it contains cannot be separated by heat alone. Exposed to the air, it deliquesces into a syrupy liquid, which gradually absorbs carbonic acid. It is the most powerful alkali known. It forms well-defined salts with the acids, all of which are soluble in water. Its uses in the laboratory and manufactory are manifold, both in the

Potash,

solid and liquid conditions. The solid hydrate, from having a great affinity for water, is used by the chemist for drying gases, for decomposing silicious compounds, and various organic substances. It is used in surgery as a caustic. Its solution, *Liquor potassae*, is used in medicine as an antacid; dose, 20 to 60 minims three times a day. The solution should be preserved in green glass bottles, glass containing lead being dissolved by it. It should be kept from contact with the air, as it readily absorbs carbonic acid, passing into the form of carbonate. The *acetate of potash* is used as a diuretic and purgative, being diuretic in doses of 10 to 20 grains, and purgative in doses of 2 to 3 drachmas. The *bicarbonate of potash* exists in considerable quantities in the juice of the grape, and is left as a deposit in wine-casks, forming a crystalline incrustation called *argol*, or *crude tartar*. It is purified by solution and crystallization, which renders it perfectly white. When in fine powder, it is called *cream of tartar*, or *acid tartrate of potash*. It is cooling and diuretic in doses of 20 to 60 grains, and laxative in from 60 to 120 grains.—There are two *Carbonates of Potash*, the ordinary carbonate and the bicarbonate. Carbonate of potash exists in the ashes of inland plants, from which it is extracted by lixiviation. The *bicarbonate* is prepared by passing carbonic acid through a saturated solution of mono-carbonate, when, being less soluble, it is precipitated. It is occasionally used in medicine as an antacid in dyspepsia, and as an antithetic in urinary affections, where there is a deposition of uric acid. Dose, 10 to 20 grains.—The *Liquor Potassae Effervescent*, or effervescent potash water, is made of 30 grains of bicarbonate of potash dissolved in 20 ounces of water; then passing into it as much carbonic acid gas as can be introduced by the pressure of seven atmospheres, and bottling. Dose, 5 to 10 ounces.—The *Chlorate of Potash* is usually formed by passing chlorine through a mixture of solution of caustic and hydrate of lime. It is occasionally used in medicine as a sudorific and diuretic. Dose, 10 grains in water 3 or 4 times a day.—The *Citrate of Potash* is a white powder of saline, feebly acid taste. It is cooling, diaphoretic, and mildly laxative, and is valuable as forming a cooling ~~drink~~ in fevers, and useful in gout and rheumatism. Dose, 20 to 50 grains in water.—The *Nitrate of Potash*.—*Nitre, Saltpetre*,—occurs as an incrustation on the surface of the earth in hot climates, more especially in India, Arabia, and South America. In more temperate countries, especially in those not favourably situated for the importation of this salt, it is obtained by artificial processes. The fused salt is known in pharmacy as *salt Prunelle*. Nitrate of potash has a cool, saline taste; it dissolves in five parts of cold water

Potassium.

with considerable depression of temperature, and in less than its own weight of boiling water. It is but very slightly soluble in alcohol. It is much used in medicine as a refrigerant, diuretic, and diaphoretic. In acute inflammatory diseases it reduces the febrile excitement, and is also useful as a gargle in inflammatory sore throat. Dose, 5 to 20 grains as refrigerant and diuretic, 20 to 30 grains as a sedative.—There are two *Sulphates of Potash*,—the ordinary sulphate, and the acid bisulphate. Sulphate of potash is an anhydrous salt, crystallizing in six-sided prisms, with pyramidal heads, or in four-sided oblique rhombic prisms. It is used in medicine as an alterative and a mild purgative, acting usually without irritation. Dose, alterative, 10 to 20 grains; purgative, 2 to 3 drachms. Bisulphate of potash is formed on a large scale during the manufacture of nitric acid from saltpetre, and is the *sal suzum* of the older writers.

POTASSA SULPHURATA. (See *Potassium, Tertiaphuric of*.)

POTASSIUM, po-tas'-e-u-m,—symbol K, equiv. 38.66, spec. grav. 0.865, melting-point 130°.—This remarkable metal, which is the base of the alkali potash, was discovered in 1807 by Sir Humphrey Davy. It is a silver-white substance, with a slight bluish tint: at 32° Fahr. it is brittle, and has a crystalline fracture; at temperatures above freezing-point, it gradually becomes malleable, until it reaches 60°, when it is pasty. Exposed to the air, it becomes covered with a film of oxide almost immediately, and when thrown into water its affinity for oxygen is so great that sufficient heat is produced to volatilize and fire the metal. From its affinity for oxygen, it is necessary to preserve the metal either in hermetically sealed exhausted tubes, or beneath the surface of some liquid containing only carbon and hydrogen, such as naphtha. Potassium forms two compounds with oxygen; the oxide, and the tetroxide. The combinations of potassium with the elements are most important. The uses of hydrate, nitrate, chloride, and carbonate of potash have already been described. (See *Potash*).—The *Bromide of Potassium* is used in medicine as an alterative and deobstruent, especially for enlargements of the liver, spleen, &c., and has also a special power in subduing irritation of the nervous system, and is strongly recommended in hysteria, epilepsy, &c. Dose, 5 to 40 grains.—The *Iodide of Potassium* is an important salt. It is used in medicine as an alterative and stimulant of the secretions; in kids reagent resembling iodine, but less irritant in its action. Dose, 5 to 20 grains. An ointment and liniment are also prepared of iodide of potassium. Potassium combines with sulphur in at least two different proportions.—The *Tertiaphuric of Potassium, Sulphurated Potash*, or *River of sulphur*, is used in medicine as an irritant

Potato.

stomatid, and diaphoresis, and both externally and internally in diseases of the skin. Dose, 3 to 8 grain.

Potash. (See SODIUM.)

Poultice. (See CARAPLASH.)

Powder. (See AEROMACARINS' WHISKER.)

Powder [Lat. *pulvis*], is a very common form in which medicines are administered, particularly to children. Some medicines are best given in the form of powder, in order that their distinctive properties may be most easily and expeditiously brought out. Powders may be either simple or compound, consisting of one substance or of several. The several ingredients should be very finely powdered and well mixed. In general powders should be given in some thick substance, as honey, treacle, or gum.

Prescription [Lat. *prescriptio*] is a recipe or formula for the exhibition of medicines. The ingredients of a prescription are usually distinguished as (1) the *basis*, or active ingredient; (2) the *adjuvans*, or that which assists or promotes the operations of the former; (3) the *corrugens*, which is intended to correct anything injurious or unpleasant in the others; (4) the *constitutens*, or that which blends or gives a commodious or agreeable form to the whole. The tendency now is to have the prescription as simple and with as few ingredients as possible.

Propane, a flexible piece of whalebone, with an oval piece of ivory or a piece of sponge fixed at the end, and used by surgeons to push down into the stomach foreign bodies which stick in the oesophagus.

Probe [Lat. *probe*, I try] is a surgical instrument of a long and slender form, used to find out the depth or extent of wounds, &c.

Prognosis, *pro-gno'-sis* [Gr. *pro*, before; *gnosis*, I know], is the opinion formed respecting the future course of a disease from particular symptoms; as how long it is likely to continue; whether it is likely to terminate in recovery or death, &c. It demands great skill and experience, and even the most skilful, however anxious to allay the fears and anxieties of the patient and his friends, require to speak on such subjects with caution, for no human sagacity can anticipate the numberless influences for good or evil that may come into play during the course of a disease. The principal sources from which the elements of prognosis may be derived are (1) the disease itself, (2) the peculiarities of the patient, and (3) the external influences modifying both of the foregoing.

Prostration [Lat. *prosternor*, I slip down] is a falling down of the lower part or extremity of the bowel, a very common occurrence in infancy. In most cases the prostrated part is easily returned by gentle pressure with the fingers. Cold astringent ointments and stimulants are the means usually adopted to effect a cure.

Pterocarpus.

Protein, *pro-te-in* [Gr. *protein*, I am first], a peculiar yellowish, horny, semi-transparent substance, produced by neutralizing an alkaline solution of any albuminoid compound; such as albumin, fibrin, or casein. According to Mulder, the substance produced from either of these bodies is identical in composition, and he therefore looks upon it as the fundamental principle of the group, giving rise to albumin, fibrin, casein, globulin, vitellin, and legumin, by uniting with various proportions of sulphur and phosphorus. Liebig, and many other chemists of renown, deny the correctness of this view, and assert that no such body as protein exists.

Psoriasis is applied to the granulations which arise on a sore in the process of healing when they project beyond the level of the surrounding parts. In such cases it will be necessary to check it by applying some caustic substance, as lunar caustic, blue vitriol, or red precipitate of mercury.

Prunus, *pru'-nus* [Lat.], the Plum, a gen. of the nat. ord. Rosaceæ, sub-ord. Amygdaleæ or Drupaceæ. The species *P. domestica* and its varieties produce the well-known fruits called plums, greengages, and damsons. *P. spinosa*, the common sloe or blackthorn, is a true native of Britain; its bark has febrifugal properties. The leaves are sometimes used to infuse China tea. Plums, when dried, are termed prunes or French plums, and are sometimes used in domestic medicine as a laxative.

Prurigo [Lat. *pruria*, I itch], is a troublesome itching of the skin, arising from various causes, and of which there are several different kinds. Sometimes it arises from a disordered state of the stomach and is to be treated by laxatives and a change of diet. In other cases frequent washing in tepid water and the use of sulphur internally will be of benefit.

Prussico Acid. (See HYDROCYANIC ACID.)

Psoriasis, *pso-ri'-a-sis* [Gr. *psora*, the itch], is an eruptive disease of the skin, characterised by red spots or blotches upon which scales form and are thrown off and renewed. It frequently spreads itself over large portions of the skin, and may come to occupy nearly the whole body. The warm bath and full doses of *Niger potassæ* (from $\frac{1}{2}$ to 1 drachm three or four times a day) in many cases effect a cure; and failing that, arsenic cautiously administered will generally be found to be successful. (See ARSENIO.)

Pterocarpus, *ter-o-kar'-pus* [Gr. *pteros*, a wing; *carpos*, fruit], a gen. of the nat. ord. Leguminosæ, sub-ord. Papilionaceæ. *P. Marsupium* is the course of the official hina of our pharmacopœia, which is known under the names of *Java Hina*, *Bast Indian*, *Ankheya*, and *Malabar Hina*. It is one of the most powerful vegetable astringents known, and is employed in diarrhoea, rheumatism, and other discharges, and externally as a styptic: dose.

Ptyalism.

from 10 to 30 grains. The compound powder (3½ ounces of lime in powder, ¼ ounce of opium in powder, and 1 ounce cinnamon in powder), dose 10 to 20 grains. Tincture (2 ounces of powdered lime, macerated for seven days in a pint of rectified spirit), dose ½ to 2 drachms.

Ptyalism (*See Salivation*)

PUBERTY, pu'ber te [*Lat. pubertas*], is that period of life in which boyhood or girlhood ceases and youth begins. The precise period differs in different countries, being much earlier in southern than in northern climates. The usual period in this country is from the twelfth to the fourteenth year in females, and from the fourteenth to the sixteenth in males. In colder regions, as Sweden, Russia, &c., it does not occur for two or three years later. Various physiological and intellectual changes manifest themselves at this period. The organs of respiration and voice acquire their full tone, the muscles their due proportion, and the cerebro spinal nervous system its beautiful organization. The child puts away childish things and begins to look upon the world with, as it were, new senses, the mind becomes stored with new ideas, and hope shines over the future. The changes that take place at this period render the individual liable to a variety of diseases, more particularly of an inflammatory nature.

Puerperal [Lat. *puerulus*], pertaining to child bearing or puerperal convulsions puerperal fever, &c.

Puerperal fever is a fever occurring in a woman who has recently lain in. There are diverse forms of febrile disease to which women in such circumstances are liable, and to which this term is applied. In general, however, the name denotes "a continued fever, communicable by contagion occurring in connection with child birth and often associated with extensive local lesions especially of the uterine system, peritonitis, effusions into serous and synovial cavities and diffuse suppuration." It may be caused by violence during delivery, by cold, or the injudicious use of stimulants. It may come on rapidly or slowly, with marked symptoms or insidiously. It is always attended with danger, but is more frequently fatal in hospitals than in private practice. Treatment.—The treatment consists in alleviating the inflammatory symptoms, for which opium should be freely used. A purgative should also be administered, and the bowels kept freely open. Warm fomentations should also be applied to the abdomen. At the same time the strength is to be sustained by strong soups, milk, &c., and wine or brandy in frequent small quantities if necessary.

Pulmonary, pu'lo-när'ye [Lat. *pulmo*, a lung], denotes of or belonging to the lungs, as pulmonary consumption. (*See Ptxis*)

Pulse, pu'se [*Lat. pulsus*], in Physiol., is the alternate expansion and contraction of an artery, occasioned by the propulsion of

Pus.

the blood by the heart, in the form of waves. The pulsations of an artery are nearly synchronous with the contractions of the left ventricle of the heart, the difference, in a state of health, being only from $\frac{1}{4}$ to $\frac{1}{3}$ of a second, depending on the distance of the part from the heart. It may be felt in any artery, but most conveniently in the radial at the wrist. The pulse varies at different ages and in different states of the system. In the newly born infant it averages 170 to 140 beats a minute, while in a mature life it ordinarily averages from 70 to 75. It is slower during sitting than standing, and slowest during lying, while by inflammatory or acute disease it may be raised to 120 or even 160 in the adult. Besides the number of pulsations, their character and the regularity or irregularity of their occurrence are important diagnostic signs. It may be strong or weak, hard or soft, full or small, &c. Galen first drew attention to the pulse as a sign of disease, and enumerated more than thirty different conditions of it.

PUNICA, pu'ne ka in Bot., the Pomegranate, a gen. of the nat. or i. *Myrtaceæ* or according to some botanists, the type of a distinct nat. ord. named *Ceratocarpus*. *P. granatum* is the pomegranate; the leaves, flowers, and fruit of which were all used by the ancients for their astringent properties, and the juice of the fruit also in the preparation of cooling aconitum drink. The rind of the fruit and the bark of the root are commonly used as medicinal agents in this country. They are chiefly employed for their astringent properties, which are due to the presence of tannin and gallic acids.

PURPIL (*See FXR*)

PURGATIVE (*See LAXATIVE*)

PURPURÆ [Gr. *purpura* purple] is a disease characterized by the appearance of small round spots of a dull red or deep purple colour on various parts of the surface. They generally appear first on the legs, and spread to other parts, covering sometimes, the entire surface of the body, and even occasionally extending to inner surfaces. They are attended by no pain or sensation of any kind, and pressure upon them does not affect the colour in any way or render it fainter. The cause of this disease is the escape of blood from the capillaries or small blood vessels. It is generally a disease of weakness, and requires in its treatment a nourishing diet, tonics, and stimulants, but sometimes it occurs in persons of a full and vigorous habit, and then the contrary line of treatment will require to be adopted.

Pus [*Lat.*] is the white or yellowish matter which is formed during the process of suppuration. When inflammation in a part does not go off spontaneously, or is not subdued by proper remedies, suppuration takes place and matter is formed. This is the next best termination, and when the in-

Pustule.

flamed part is within reach should be promoted by the application of warm incisions or poultices.

PUSTULE, an elevation of the cuticle of circumscribed extent and of a conical form, containing pus. Pustules are of different kinds, and are seen in small pox, cow pox, and various skin diseases. (See SKIN, DISEASES OF THE.)

PUTOMUS [Gr. *pale*, a gate, and *ore*, keeper] is the lower orifice of the stomach, through which its contents pass to the bowels. (See STOMACH.)

PYREXIA [Gr. *pyr*, fire] is a term applied to fever, on account of their burning nature. (See FEVER.)

PYROLYNIOUS ACID, *pyrolysis he us* [Gr. *pyrolysis*, Lat. *lignum*, wood], a name formerly given to acetic acid, produced by the dry distillation of wood.

PYROSIS. (See HARTSHORN, WATERBURN.)

PYROXYLIN, *pyrol'as lin* [Gr. *pyr*, fire, *xylo*, wood], a substitutive compound of explosive character, discovered by Schönbein, formed by immersing cotton, tow, linen, sawdust, or any other form of cellulose, in a mixture of equal measures of oil of vitriol and nitric acid. It is specially characterized by its explosibility and solubility in a mixture of ether and alcohol. Dissolved in a mixture of ether and alcohol, and mixed with a certain proportion of some soluble iodide, it forms ordinary photographic collodion, which is also used in surgery to form an artificial skin to excoriated surfaces.

PYRUS, *pyr'rus* [Colt. *pyren*, a pear] a gen. of the nat. ord. Rosaceæ, subcl. i. Po:æ. Our principal orchard trees belong to this genus. *Pyrus Malus*, and its varieties, produce the different kinds of apples. (See APPLES.) *P. communis* and its varieties produce the different kinds of pears.

Q.**QUASSIA.** (See PICABAMA.)

QUEOUS, *queo'kus* [Lat.] the oak, a gen. of the nat. ord. *Corylaceæ*. *Q. Robur* is the common British oak, of which there are two varieties, by some regarded as distinct species, called *Q. pedunculata* and *Q. sessiliflora*. Besides the British oak, there are the *Q. cerris*, the Turkey or Adriatic oak, *Q. alba*, the white oak, *Q. rubra*, the red oak; *Q. fimbriata*, the black oak, and *Q. urens*, the live oak. The bark of several species is astringent, and employed, to some extent, in medicine; that of *Q. pedunculata* is most esteemed. The dried bark of the small branches and young stems of this tree, collected in spring from plants growing in Britain, form a valuable astringent, either externally or internally. Dose of powder, 30 to 120 grains. The decoction is formed

Quinsy.

by taking 1*1/2* ounces of the bruised bark and boiling for 10 minutes in one pint of distilled water, straining and washing the mare with water to make up a pint. Dose 1 to 2 ounces, two or three times a day (See GALLS.)

QUICKSILVER (See MERCURY.)

QUININE, or QUINIA *quin'ee-a*, *kwine'-ee-a* an alkaloid found in the bark of trees belonging to the Cinchona or Peruvian Bark family. Besides quinine, these barks yield five other similar alkaloids, but as they are not used to any extent, it will be necessary to only enumerate them. They are cinchonine, cinchonidine, cinchonine, quindine, and quinavine. Quinine occurs most in the yellow bark, or *Cinchona cordifolia*. The quantity varies in different specimens from 3 to 4 per cent. Quinine being very insoluble in water, it is generally used in medicine in the form of sulphate or disulphate, which dissolves readily in alcohol and water. Quinine is one of the most valuable febrifugae and antiparoxysmatics that we possess. (See CINCHONA.)

QUINSY, or CYANACHE, *keen'-see* [corrupted from Fr. *cyananche*, Lat. *cynanche*], is an inflammation of the throat. Medicalmen distinguish it into different kinds, according to the nature of the inflammation, or the part chiefly affected, as croup, diphtheria, pharyngitis, tonsilitis, &c. The two former are noticed under their proper heads, the latter are those that commonly come under the head of quinsy. They do not differ materially from each other either in character or in the mode of treatment, but in the one case the pharynx is the principal or sole seat of the disease, in the other, the tonsils. The inflammation is brought on by cold, and it usually commences with cold chills and other febrile symptoms. There is intense heat, and dryness of the throat, with a hoarse voice, difficulty of swallowing, and shooting pains towards the ear. The inflammation may be confined to the pharynx or it may spread from it over the soft palate and the tonsils, and into the cavities of the nose. On examination the back of the mouth and fauces will be found unnaturally red and swollen, and often covered with a tough mucus. Treatment.—In general, a common sore throat does not require much treatment, the inhaling of the vapour of hot water, or a large poultice round the throat, with gentle purgatives, and the avoidance of stimulating food, being usually all that is necessary for its removal. Frequently, however, the swelling continues for some time, and occasionally the disease takes the form of relaxed sore throat, which requires to be treated with stimulating gargles, as hot wine, very diluted mineral acids, &c., and tonic, if the general health be not good. In more severe cases, the difficulty of swallowing is much increased, and to avoid the pain the patient usually

R.

Allows the saliva to flow from his mouth, and liquids attempted to be swallowed return through the nose. The inflammation may also extend to the Eustachian tube, producing deafness, and to the parts around the larynx, occasioning difficulty of breathing. With these symptoms there is usually a considerable degree of fever, with headache, loss of appetite, &c. In such cases, strong purgatives are required, with a blister outside the throat, and warm pouzzes, the inhaling the steam of hot water, stimulating gargles, and if the throat be much swollen, leeches applied to the sides. Sometimes an abscess is formed in one or both tonsils, from which the patient suffers greatly. This will in time burst; but it will materially shorten the patient's sufferings if it be opened as soon as the matter is distinctly formed. After the inflammatory symptoms have subsided a generous diet and tonic medicines are necessary. Where the tonsils have become permanently enlarged, or where other means fail, it is sometimes necessary to reduce them by cutting to their natural dimensions. In malignant or putrid sore throat there is great prostration of strength, accompanied with a low typhoid state, requiring the remedies used in low typhus, with antiseptic gargles, leeches, and nutritive diet, &c.

R.

R or R at the commencement of a medical prescription is a contraction for recipe. (See RECIPE.)

RADISH. (See RAPHANUS.)

RADIUS. (See ARM.)

RAPHANUS, *ræf'-ə-nəs* [Gr. *raphanis*, a radish], a gen. of the nat. ord. *Cucurbitæ*. Like most of the salad plants derived from the ord. *Cucurbitæ*, radishes are antiscorbutic and pungent; but, owing to the excess of woody tissue, they are somewhat indigestible.

RASHES are superficial red patches, occurring irregularly over the body, and generally accompanied with increased heat and irritation. Mild aperients, as rhubarb or magnesia, attention to diet, cooling drinks, and tepid baths, will generally effect a cure.

RATANY, or RHATANY Root. (See KRAMERIA.)

RECEPTACULUM CHYLI. (See Digestion.)

RECIPE, *re-s'pe* [Lat. *takē*], is a name sometimes applied to a medical prescription, from the symbol R denoting recipe, with which it begins. According to some, this character is the astrological symbol of Jupiter, the planet whose ascendancy was regarded as favourable for the collection and preparation of medicinal herbs.

RECTUM, *ræk'-tum* [Lat., straight], is the

Respirator.

name given to the last portion of the large intestines, so called from an erroneous notion among the old anatomists that it was straight. It commences at the sigmoid flexure of the colon, and terminates in the anus. It is cylindrical in shape, and not sacculated like the colon, and is narrow at its upper part, becoming gradually dilated towards its termination, just above which the dilatation is considerable.

RECTUS [Lat., straight], a term applied to certain muscles and some other parts, from their straight appearance as *Rectus Abdominalis*, &c.

REDUCTION, in Surg. is the returning of a dislocated bone to its proper place. (See DISLOCATION.)

REFLEX, a name given to that kind of nervous action in which impressions made on the extremity of one nerve are propagated to the extremity of another through the nervous centre without the intervention of the will.

REGIMEN, *re'-jɪ-men* [Lat. *regō*, I govern], a term used to denote the regulation of the diet and habits of an individual with a view to the preservation of health or the cure of disease.

REMITTING FEVER. (See FEVER.)

RENAL, belonging to the kidneys. (See KIDNEY.)

RESINS, an important class of vegetable substances obtained from various trees by making incisions in their bark, from which they exude in the form of a viscous liquid, consisting of the essential oil of the plant holding the resin in solution. They are generally insoluble in water, but dissolve readily in alcohol.

RESOLUTION [Lat. *reso-ro*, I loosen], is applied to the dispersion of swellings, indurations, &c., or the termination of inflammation without any abscess, mortification, &c.

RESPIRATION, *res'-pe-rā-shən* [Lat. *re*, and *spiro*, I breathe], is the alternate inspiration and expiration of atmospheric air in breathing. The blood which circulates through the system requires, for its purification and the restoration of its vital qualities, to be brought into contact with the atmospheric air; and this is effected in the lungs. The air brought into contact with the blood is decomposed, its oxygen uniting with the blood, whilst its nitrogen is returned by expiration unchanged, with an additional quantity of carbonic acid gas. The mechanical part of the function of respiration is effected by the action of the ribs and diaphragm. About twenty respirations take place in a minute, and from thirty to forty cubic inches of air are inspired at each inspiration. (See LUNGS.)

RESPIRATOR is the name of an instrument worn over the mouth in order to impart warmth to the air which is drawn into the lungs in breathing. It is composed of numerous layers of wirework, usually from 2

Resuscitation.

to 24, fixed in frames of very thin silver or other metal, and the whole bound together or enclosed in a border or case of soft leather, with usually an outer coat of a very fine and open woollen fabric over it. The warmth of the exhaled air in passing through the wires is imparted to the metal, and is communicated to the fresh air before being inspired. In this way the lungs are protected from the influence of cold air, and those in whom these organs are delicate are in thus way enabled to go out in the open air even when the weather is very cold.

RIBS OF CATTLE (See DROWNING)

RIGHT MUSCLE (See SKIN)

REFLICTION OF URINE (See ISCHURIA)

REFLEXA (See EYI.)

RHAMNUS, *ram nus*, the typical gen. of the nat. ord. *Rhamnaceæ*. It includes many interesting and useful species. *R. cathartica* Linn. the buckthorn produces a fruit which has been for ages employed medicinally in a cathartic but is now seldom used, on account of its violent and unpleasant operation. The bark of *R. angula*, the black alder posse^s purgative and astringent properties and is reported to be efficacious in various cutaneous affections, rheumatism, secondary syphilis, &c.

RHAMNANT ROOT (See KRAMPTIA)

RHEUM, *rum*, Rhubarb, a gen. of the nat. ord. *Polygonaceæ*. The species of this genus are all more or less remarkable for their purgative and astringent properties, and their root, which contain the largest proportion of the active principles, are largely used as medicinal agents. The exact source of our official rhubarb has not been definitely ascertained. Dr. Bylestone states that the rhubarb country whence Turkey or Russian rhubarb is derived, is in the heart of Thibet with a 95 of F long, and 5 of N lit. English rhubarb is the root of *R. rhaponticum*, it is now extensively employed in this country and America but it is not so active as the official rhubarb (Rhubar). It is non-irritant cathartic also mildly aperient and tonic. It is useful in dyspepsia attended with constipation, also in diarrhoea when purging is indicated. Dose of powder as stomachic 1 to 5 grains, purgative 10 to 20 grains. Dose of Extract, 5 to 10 grains of Infusion (½ ounce of sliced rhubarb in 1 pint of boiling distilled water for one hour), 1 to 2 ounces Compound Pill (rhubarb in fine powder, 3 ounces, Sooting aloes in fine powder, 2½ ounces, myrrh in fine powder, 1½ ounce, hard soap, English oil of peppermint, 1½ drachm, resin, 5 to 10 grains). Compound Powder (rhubarb in powder, 2 ounces, light magnesia, 6 ounces, ginger in fine powder, 1 ounce), 20 to 30 grains (in children, 5 to 10 grains). Syrup (rhubarb in coarse powder, 2 ounces, refined sugar, 24 ounces, coriander fruit, in powder, 2 ounces, rectified spirit, 8 in 1 ounce, distilled water, 24 ounces),

Rheumatism

1 to 4 drachms. Tincture (rhubarb bruised, 2 ounces, cardamoms bruised, ½ ounce, coriander bruised, ½ ounce, saffron ½ ounce, proof spirit, 1 pint), as stomachic, 1 to 4 drachms, as a purgative, ½ to 1 ounce. Wine (rhubarb in coarse powder 6½ ounces, canella bark, ½ ounce, sherry, 1 pint), 1 to 2 drachms.

RHEUMATISM, *ru'matizm* [Gr. *rhumatos*, a fluxion], is one of the most common and painful diseases of this country. *Characteristics*—It is characterized by an inflamed state of the fibrous tissue, and whenever fibrous tissues are found there may be rheumatism, but it principally affects the larger joints and places covered by muscle, as the wrists, elbows, knees, hip joint back, and loins. When the joints about the back and loins are affected it is called *lumbago*; when the pain is in the hip joint *sciatica*; and when the muscles of the chest are affected, *pleurisy*. Rheumatism may occur either with fever or without it, being in the former termed *acute*, in the latter *chronic*. Acute rheumatism, or rheumatic fever, may happen at any time, but occurs more particularly in autumn, and affects chiefly such as are in the prime of life. It is generally occasioned by exposing the body to cold immediately after having been heated, and commences with chilliness and shivering, which are soon followed by heat, restlessness, and other feverish symptoms. An acute pain is soon after felt in one or other of the limbs. This quickly increases and in a short time is accompanied with swelling and great tenderness of one or more of the large joints with much constitutional disturbance. The patient's sufferings are now of the most agonizing character. He is restless and yet dare not or cannot move even the weight of the bed clothes can scarcely be borne. The pulse is full and bounding, the skin is generally bathed in perspiration of a disagreeable sour odour, the bowels are constipated the urine scanty, and high coloured, loaded with ureic acid excreta. This disease varies considerably in intensity and duration, and may terminate in a few days or endure for several months. Its average duration, however, when un complicated with other diseases, is from ten to eighteen days. One remarkable feature of it is its tendency to move from one part to another, often suddenly leaving one joint and making its appearance in another, and again going back to its original seat. It is seldom, if ever, a fatal disease, except when it attacks some vital organ, as the heart, which in severe cases it is very apt to do. It is a constitutional disease, arising from poison circulating in the blood. This poison constitutes that predisposition to the disease without which it would not occur, and the cold probably exercises its injurious influence by checking the elimination through the skin, and other excretaries, of

Rheumatism.

the poisonous principle as it forms, and thereby accumulating it in the blood. *Treatment*—Medical men are by no means agreed as to the treatment best adapted for this complaint. In general, however, when the patient is young and robust, and when the inflammatory fever is high, bleeding from the arm is recommended. Wherever the pain is very acute, opium will be found to be a very useful and necessary remedy. The administration of active purgatives, particularly at the outset of the disease, is said to be very beneficial. Alkaline drugs are by many strongly recommended in this disease, as being chemical antagonists of the poison. "Alkalies or the alkaline salts," says Sir Thomas Watson, "are always, in my opinion, the remedies to be employed in the treatment of acute rheumatism." They may be added largely to the common effervescing saline draught, or they may be simply dissolved in water. Together with them, blood letting, calomel, purgatives, opium, and colchicum may be variously combined according to the special circumstances of the case. The favourite remedy of the late Dr. Golding Bird in this, and in some other blood diseases was the acetate of potass, in quantities of half an ounce, administered largely diluted, in divided doses in twenty four hours, and "I do not hesitate to declare," he says, "that I have never seen the disease in question yield with so much facility to any other remedy." A chronic form of rheumatism is sometimes the sequel of the acute, but it is more commonly a separate constitutional affection, coming on independently of any previous acute attack. There is, indeed, little constitutional disturbance, but the sufferer is constantly annoyed, and his existence made miserable with chronic pains which distress him comfort by day, and reduce him to sleep by night. In some instances the pains are worst at night, being aggravated by the warmth of the bed; in others warmth affords the greatest relief. The cure of this complaint is tedious and often very difficult. It frequently involves and cripples some of the smaller joints, especially those of the knuckles and fingers, rendering them knobby, and distorting their form and position. It is of the utmost importance in such cases that the patient be protected from the vicissitudes of the weather by warm clothing, and those who can afford it do well by taking up their residence in a warm climate. Warm bathing, vapour and hot air baths, with frequent friction, and the use of the flesh brush, are of great service and stimulating internal medicines, as turpentine, are often of use. Cod-liver oil is also sometimes recommended, with bark, wine, iron, and other tonics, for invigorating the system. Persons subject to chronic rheumatism should always be very careful in their diet, as there is little doubt that many of the

Rickets.

paroxysms of this disease are brought on by a disordered state of the digestive organs.

RHEONCHY, *ro'ne-kus*, is a term employed in auscultation, to denote a rattling or wheezing sound, occasioned either by the passing of the air through fluids in the lungs, or by constriction of the bronchial tubes.

RUBARE (see RHEUM.)

RIBS, *ri'bзs*, a gen. of the nat. ord. *Gymnospermae*. *E. grossularia* is the source of the numerous varieties of gooseberries, so much used both in the unripe and ripe condition for tarts, and puddings, formalin & opium, and for dessert. *E. rubrum* yields both red and white currants, and *E. nigrum* black currants. These are used for the same purposes as gooseberries, and are particularly adapted for making jams and jellies. An infusion of black currants is much used under the name of *black currant tea* as a cooling drink in fevers.

RIBS, *ri'bзs* [Sax] are the long curved bones which form the walls of the chest. They extend in an oblique direction from the vertebrae of the back to the sternum in front. They are twelve on each side, although in some rare cases thirteen have been found, in others only eleven. They are distinguished into true and false, the former being the six upper ribs, which are articulated to the sternum, the latter the five lower ones, which are not immediately attached to that bone. The use of the ribs is to cover and defend the lungs and heart, and their articulations with the vertebrae and sternum admitting of a slight motion, they assist in respiration (see ANATOMY, LUNAR).

RICINE (See OPIUM.)

RICINUS, *ri'cнus* [Lat. *ricinus*, a tick, which in seed resembles], a gen. of the nat. ord. *Euphorbiaceae*. *R. communis* is the Palma Christi, or castor oil plant, native of India. Castor oil is obtained from the seeds, either by expression with or without the aid of heat, or by decoction, or sometimes by the aid of alcohol, that employed in England is obtained by expression solely. Castor oil is a mild and most efficient non irritating laxative, and on that account is particularly useful in cases of irritation or inflammation of the bowels. Dose, 3*z* to 1 ounce for adults, 1 to 3 drachms for infants. It may be given swimming on weak spirit and water, or on hot milk or coffee.

RICKETS, or Rachitis, *rik'et's* [Gr. *rachis*], is a disease of the bones, in which they are of unnatural softness, and become bent under the weight of the superincumbent parts of the body. It is confined to the young, and commonly makes its appearance between the first and third year. As soon as the weight of the body is thrown on the limbs, they become bent and twisted in the most extraordinary manner, the joint to become enlarged, the chest and pelvis deformed, and the head large and swollen.

Ringworm.

The bones in this disease are found to be soft and cellular, and deficient in earthy matter. In addition to this, the muscles are always pale and weak, with other signs of general debility; besides which the brain and organs contained in the chest and abdomen are liable to suffer. The nature of this disease requires that its treatment be directed chiefly to strengthening the general constitution by a good and well-regulated diet, pure air, warm clothing, bathing or sponging with sea water, and such active exercise as may be borne without fatigue. In addition to these, cod-liver oil, iron, and phosphate of lime should be given; and plasters or other mechanical means employed to bring the parts into their natural shape.

RINGWORM, *ring-worm* [Lat. *porrigo*], is an eruptive disease of the skin, more particularly on the head, and of which there are several kinds. The most common kind commences with clusters of small light-yellow pustules, which soon break and form thin scabs, which, if neglected, become thick and hard by accumulation. When removed, they appear again in a few days; and by these repetitions the incrustations become thicker, and the area of the patches extends, so as, if unchecked, to affect the whole head, and extend also to the forehead and neck. The patches are of an irregular circular form. This disease occurs generally in children of three or four years and upwards, and often continues for several years. It is said to occur spontaneously in children ill-fed and uncleanly, and is readily propagated by contagion. It has recently been discovered that this disease is owing to the presence of a cryptogamic parasite, called the *Trichophyton*. *Treatment*—The treatment consists in applying to the parts some preparation which will destroy the fungus. The first thing to be done is to remove the hair, and this should be done with a pair of pincers, or some such depilatory as one part each of lime and carbonate of soda, and 30 parts of lard. Afterwards, the parts should be washed with a solution of bichloride of mercury (1 part to 50 parts of water), or with a solution of sulphuric acid (1 part to 8 of water). The general health should be at the same time attended to, and nutritious diet, tonics, cod-liver oil, and regular exercise used when necessary.

ROCHELLE SALT, or TARTARATED SODA (See Soda.)

ROSE, *ro-sé* [Gr. *rhodos*, a rose]. The Rose, a gen. of the nat. ord. *Rosaceæ*. The species and varieties are well known for the beauty and fragrance of their flowers. The dog-rose or briar, *Zygium*, is the commonest British species, being found in hedges and thickets in most parts of England, Ireland, and Scotland. The fruit, commonly called hips, are employed in medicine for their refrigerant and astringent properties. It is

Ruta.

chiefly used as a confection and a pill base. The confection is prepared by beating to a pulp in a stone mortar, and rubbing through a sieve 1 pound of hips, deprived of their seeds, adding 2 pounds of refined sugar, and mixing thoroughly. Dose, 1 drachm, or more. The dried petals of the unexpanded flowers of *R. gallica* constitute the red-rose leaves of the shop; they are used medicinally as mild astringents and tonics. *Rose-water* is prepared by distilling the fresh petals of *R. centifolia* with water.

ROSE-BEAN. (See EATERSPEL)

ROSEMARY. (See ROSEMARINA)

ROSEMARINA, *ros-ma-ri'-na* [Lat. *ros*, dew; *marina*, bordering on the sea]. The Rosemary, a gen. of the nat. ord. *Labiatae*. *R. officinalis*, the common rosemary, is a well-known herb, formerly much used in domestic medicine as a remedy for the headache. The flower tops contain a volatile oil, which imparts to them a stimulant and carminative properties. Those are, however, seldom used medicinally at the present time, but are largely employed in perfumery.

ROUBALIATE, *ru-be-fu'-she-ens* [Lat. *rubefacio*, I make red], is a name given to certain substances which, when applied to or rubbed upon the skin, cause redness. They are frequently useful in removing pain or inflammation from internal parts.

RUFOLE. (See MEASLES)

RUBIA, *ru-be-á* [Lat. *ruber*, red], a gen. of the nat. ord. *Galioceæ*. The species *R. tinctorum* yields the important dy-stuff called madder, which is also used in medicine as a tonic and diuretic, and has been regarded as a valuable emmenagogue.

RUE. (See RUTA)

RUMEX, *ru'-mek*, a gen. of the nat. ord. *Polygonaceæ*, including the different kinds of sorrel and dock. Several species possess acid properties, owing to the presence of oxalic acid, especially *R. acetosa*, the common sorrel. It is sometimes used medicinally for its refrigerant, diuretic, and anti-scorbutic properties. The root of *R. hydropathus*, the great water-dock, is astringent and antiscorbutic; that of *R. alpinus* is purgative, and was formerly used as a substitute for rhubarb, under the name of monk's rhubarb.

RUPTURE. (See HERNIA.)

RUSCUS, *rus'-kus*, a gen. of the nat. ord. *Liliaceæ*. The species *R. aculeatus*, commonly called butcher's-broom, possesses aperient and diuretic roots which were formerly employed medicinally in visceral diseases.

RUTA, *ru'-tū*, a gen. of the nat. ord. *Rutaceæ*. *R. graveolens* is the common rue, native of Europe. It has a very powerful, disagreeable, peevish odour, which is due to the presence of a volatile oil. Its taste is bitter and nauseous. It is used in medicine as an antispasmodic, anthelmintic, emmenagogue, stimulant, and carminative. The oil

Rye.

of rye manufactured in England is given in doses of 2 to 6 minims.

RYE. (See SECALIC.)

S.

SABADILLA (See ASAGREA)

SABA (See JUNIPERUS)

SACCHARUM (See SUGAR)

SACCHARUM LACTIS (Sugar of Milk) is a crystallized sugar obtained from the whey of cow's milk by evaporation. It is chiefly used as a vehicle for medicinal powders, but is also recommended for consumptive patients and for infants, a solution of this mixed with cows' milk being said to form an excellent substitute for that of the mother.

SACRUM, *os sacrum* [Lat., sacred bone, so called probably from bone which in sacrifice by the ancients, is the bone which forms the basis of the vertebral column, bone articulated above by the 1st lumbar vertebra, while laterally it is firmly joined by a broad ligament to the two os coxae or hip bones, and united below to the os coccygis. It is pyramidal in form, flattened before and behind, with its basitowards the lumbar vertebra and its point terminating in the coccyx.] (See ANATOMY.)

SACRON (See COCCYX)

SAGANUM, *sag-a-num* [Gr. *sag-*, a fatid gum resin, imported into Europe from Persia and Alexandria, in small droplets masses of a brownish yellow or olive colour, sometimes in tears. It is employed medicinally as an antispasmodic, and is similar to but less powerful than assafetida. Dose, 5 to 20 grains.

SAGE (See SALVIA)

SAGO, *sag-o*, a well-known form of starch, obtained from the stems of various plants, particularly those of the botanical genera *Saccharum* and *Dioscorea*. Sago is produced chiefly in the Moluccas and in Sumatra, and is brought to Singapore for granulation and re-expansion. It is the pulp of the root, and is obtained by cutting and splitting the skin, and washing it with water. The sago subsides from the washings, and forms a powder like arrowroot, but of a dirty white colour. This, when imported into Singapore, is brined, well washed, partly dried, granulated, sifted, and packed. Sago is nutritious and demulcent, and well suited for invalids. It may be boiled with water, with milk, or in soups, or made into puddings with eggs and milk.

SAL, *sal*, in Chem., was formerly used as a prefix to signify a crystallizable compound, as, for example, *sal ammoniac*, or chloride of ammonium; *sal caeruleum*, acid sulphate of potash; *sal prunella*, fused nitrate of potash, *sal volatile*, carbonate of ammonia, or liquid ammonia.

SAL AMMONIAC. (See AMMONIA)

Salt.

SALICIN, *sal-i-sin*, a neutral bitter principle found in the bark of willows. It possesses some of the properties of sulphates of quinine, and is sometimes used to adulterate the latter. It is tonic and stomachic, and may be given in doses of 5 to 10 grains.

SALIVA, *sa'li-va* [Lat., from *sal*, salt], is that fluid by which the mouth and tongue are constantly moistened in their natural state, and which is supplied by glands which form it, called the *salivary glands*. There are three pairs of salivary glands—the parotid, the submaxillary, and the sublingual. The saliva itself has neither colour nor smell, and is tasteless. It is supposed that about ten ounces are secreted in twelve hours. Its uses are to augment the taste of food by the evolution of sanguiferous matter; to mix with, dissolve, and resolve into its principles the food during mastication, so as to change it into a pulsataceous mass fit to be sent down to the rectum by the mouth and fauces. In the healthy state it consists of at least four-tenths of water, having besides, mucilage, albumen, muriate of soda, phosphate of soda, phosphate of lime, and phosphate of ammonia.

SALIVATION, or **PITILLION**, *sal-i-va-shan*, *sa-lu-tion* [Lat. *sa-lu-tio*, I spit frequently], denotes an increased and involuntary flow of the saliva. This may be caused in a variety of ways, as by the use of certain medicines, by strong mental emotions, &c., and it is also symptomatic of various diseases of the mouth and neighboring parts, as in diphtheria, scrofula, small-pox, &c. Mucous salivation is the most common agent in the production of salivation. The quantity required to produce salivation differs in different persons, and consequently its effects require to be watched to prevent excessive action. Hence whether used externally or internally, and generally after a short time, and even with a small quantity. At first the mouth feels uncommonly hot, with a copious and insipid taste, the flow of saliva is much increased, the breath becomes foul, the gums red and tender, and at length the whole mouth turns, and throat become sore and swollen, and ulcers and sloughs quickly form on the mucous membrane. In the treatment of mercurial salivation a nutritive diet purifies, and mild purgatives are required. Cold is to be particularly guarded against, as well as the other extreme of heat. Gargles of chlorate of soda or lino are useful in cleansing the mouth and correcting the taste of the breath.

SALICE, *sa'li-ke* [Lat.], the Willow, a genus of the net and *Salicaceæ*. The species found in Great Britain are commonly known as willows, osiers, and sallows. Their timber is well adapted for the manufacture of charcoal and thin bark yields a peculiar crystalline alkali called *salsolinum*.

SALT (Common), *sau-t* [chloride of sodium].

Saltpetre

is one of the most important British minerals, and is procured in immense quantities, both from fossil beds and lime springs, in Cheshire and Worcestershire. It is estimated that about a million and a half tons of salt are manufactured in Cheshire, Worcester-shire and Ireland annually, of which quantity about half (chiefly that manufactured in Cheshire) is exported. Salt is the only mineral food of man and forms an essential constituent of the blood, the loss of saline particles therefrom by the secretions of the tears, the bile, &c being repaired by the use of common salt as a condiment. Salted provisions are unwholesome but this is almost certainly due rather to their hardness and indigestibility than to the salt with which they are impregnated. All animals appear to be more or less fond of salt (see Sodium).

SALT-STAR (*See Potash, Nitrate of*)

Give the common name for an ointment, as lip salve, eye salve, &c (see OINTMENT).

SALVIA, *Salvia* [*Lat. salvia*, well, in good health, because it was esteemed capable of curing many diseases] a gen. of the nat. ord. Labiate. The species best known is *S. officinalis* the common or garden sage so much used in cookery. An infusion of sage was formerly used, under the name of sage tea as a substitute for that of China. It is still largely employed in North America as a gargle in common sore throat and when the uvula is relaxed.

SAMMEL a genus of the nat. ord. *Corynophorae*. The *S. nigra* is the common elder tree the flowers of which are mildly stimulant and are also used externally in the form of ointment poultices or fomentations. Elder flower water is prepared by mixing white fresh ro pounds of the flowers, separated from the stalks with 2 g. of water, and distilling 1 gallon. It is mostly used as a pleasant vehicle for other medicines.

(See CITHIMUM.)

SANITARY SCIENCE, *a -cid re!* [*Lat. sanitas, health*] is that department of human knowledge which regards the laws of the human body and of the agents by which it is surrounded with a view to the preservation of health and the removal of disease and death. The practical application of these laws constitutes *hygiene*, or the art of preventing disease. This is commonly divided into public and private hygiene, the former having regard to the healthy condition of persons in commandments, barracks, workhouses, &c. the latter to the health of individuals. *HISTORY* — Even as early as the time of Moses we find numerous stringent sanitary laws and regulations laid down and enforced among the ancient Jews. The Greeks and Romans also had various regulations and provisions for the preservation of health and the prevention of disease, but among modern nations little was done till

Sanitary Science

very recent times in this matter. It was not till 1831, when the cholera visited this country, that the public mind became awakened to the importance of paying greater attention to the laws of health and it was not till 1845 that the "Nuisances Removal Act" was passed which became *per* manent in 1848. By 11 and 12 Vict c. 6, (called the "Public Health Act 1848"), amended and continued by subsequent acts, a "General Board of Health" was constituted, and provision was also made for the establishment of local boards of health. After ten years of successful operation, the Public Health Act was repealed in 1856 and a new Public Health Act passed which placed the power formerly exercised by the General Board of Health in the hands of the Privy Council. In 1855 the Diseases Prevention Act and the Nuisances Removal Act were passed. By means of these and similar enactments a variety of causes of disease are brought within the operation of the law the local authorities being empowered to give notice for the removal of any nuisance and if not attended to a summons can be issued, and the offending parties brought before a magistrate. By the Vaccination Act all persons are required to have their children vaccinated within three months of their birth under a penalty of 2 shillings. *Principles* — When we regard man in his general, we find that the external agents by which we are surrounded act very differently on different individuals, arising from temperament, age, idiosyncrasy, habit, hereditary tendency, &c., all of which it is of importance to keep in view in any application of hygienic rules. Thus the conditions which would insure the health of an Englishman are not applicable to the Liki-mauks or Hin loo. There are certain diseases to which youth is most liable others to which age and persons of different temperaments exhibit very different tendencies with respect to disease and so with other peculiarities. Of external agents influencing health, the principal are the atmosphere, light, heat, electricity, water and soil. The atmosphere is subject to a variety of physical and chemical changes which more or less affect the health of man. The quantity of moisture which it contains, the amount of pressure, its various movements (winds), all exercise important influences on the health of man, and demand the careful study of the sanitarian. Light, heat, and electricity also exert important influences upon life. Water, if not free from impurities is very apt to engender disease, and is liable to be contaminated by the presence of decomposing animal and vegetable substances. Soil is also an important agent in regard to health, some soils retaining moisture and giving rise to malaria others rapidly absorbing damp. The internal agents, or those which act *soit* directly on

Sarothannus.

the functions of the body, are generally included under the heads of food, clothing, exercise, mental occupation, sleep. The object of food is to repair the waste that is constantly taking place in the body, and to maintain its temperature; hence it ought to be suited respectively to the powers of digestion and to the wants of the system for nourishment and warmth. The object of clothing is to maintain, as far as possible, an equal degree of heat all over the body and in the different seasons, so as to promote the free action of the different functions and the circulation of the blood: inattention to this subject is the cause of an immense deal of suffering, and even of death. Exercise is the calling into play the various organs of voluntary motion; when regular and moderate, it is of the greatest benefit to health, promoting the general circulation and strengthening the system; but when excessive, it tends to waste and destroy life. To diminish the destruction of life by over-exertion, and to supply such exercises as will maintain health, are important objects to the sanitarian. The due exercise of the mind, as well as of the body, is necessary to health. Here, as in the other case, a partial or excessive culture of the functions of the nervous system is likely to engender disease. Exercise requires rest, and a period of exertion should be succeeded by a time of rest. The grand rest provided for the system is sleep. In general, a healthy hard-working man requires eight hours in bed out of the twenty-four,—many do with less, and some require nine; but that may be taken as the average. Public hygiene has for its object a particular knowledge of all the circumstances affecting the health of a community, and the application of rules and remedies to the many unwholesome influences that spring out of a social existence. It takes cognizance of the geographical position of towns, the arrangement of streets, the situation and construction of houses (warming, lighting, &c.), the cleansing of public ways (draining, sewerage, &c.), supply of pure water, offensive and injurious trades, burial of the dead, disinfectants, and anti-septics. It also concerns itself with the adulterations of food, the origin and spread of epidemics, the specific and general causes of endemic diseases, &c.—(See article "Sanitary Science," by Dr. Lethby, in *Encyclopaedia Britannica*.)

SAROTHANNUS, *sa-ro-tham'-nus*, in Bot., a gen. of the nat. ord. *Peploionaceae*. *S. scoparia* is the common broom, the seeds and tops of which are diuretic and laxative in small doses, purgative and emetic in large doses. The powder or extract is given in doses of 10 to 30 grains in dropsy, &c. The decoction (1 ounce of dried tops boiled in one pint of distilled water for ten minutes in a close vessel, and then strained); dose, 1 to 2 drachms. The juice (bruise 7 pounds of

Scarlet Fever.

fresh tops in a stone mortar; press out the juice, and to every three measures of juice add one of rectified spirit; set aside for seven days, and then filter); dose, $\frac{1}{2}$ to 1 drachm for dropsy.

SARSAPARILLA. (See SMILAX.)

SASSAFRAS, *saf'-sa-fras*, a gen. of the nat. ord. *Lauraceæ*. The root and wood of *S. officinalis*, a North-American tree, are employed medicinally in this country, being stimulant, diaphoretic, and alterative.

SATIVE. (See JUNIPERUS.)

SCABIES. (See IRCH.)

SCAMMONTY. (See CONVOLVULUS.)

SCAPULA, *skap'-u-lä* [Lat., the shoulder-blade], is the name given to that flat, triangular bone passing from the shoulder-joint in a direction towards the vertebral column, and extending, when the arms hang loosely, from the first to about the seventh rib. It presents various irregularities, and is so thin in some places as to be transparent. The outer surface is slightly convex, and divided into two unequal parts by a very prominent ridge or plate of bone, termed the "spine."

SCARE-SKIN. (See SKIN.)

SCARIFICATION, *skal-re-fä'-shun* [Lat. *scarcificatio*], is the operation of making small cuts or punctures in the skin by means of a lancet or other cutting instrument, particularly that used in cupping. (See CUPPING.)

SCARLET FEVER, or **SCARLATINA**, *skar'-let'*, *skar'-le-té-ná* [Lat.], is a contagious febrile disease, almost always attended during a part of its course by a rash and by sore throat. Sometimes only one of these features is well marked, sometimes both. Though persons of all ages are susceptible of it, it is eminently a disease of children. Like small-pox or measles, it rarely attacks a person more than once. *Characteristics.*—It usually comes on with shiverings and a feeling of lassitude, followed by more or less of fever, restlessness, loss of appetite, headache, nausea, and occasionally vomiting. Then, generally on the second day, the eruption begins to come out, though in some of the worst forms it may be deferred to the fourth. In the most regular and favourable cases, the eruption stands out for three or four days, and then begins to fade and decline, becoming, by degrees, indistinct, and disappearing altogether in the majority of instances before the end of the seventh day. The tongue is often covered at the outset with a thick, white, cream-coloured fur, which gradually clears away, and the surface becomes abnormally red and raw-looking. There is a sensation of stiffness and pain on moving the neck, with pain on swallowing; the voice is thick, and the throat feels rough and straitened. Physicians distinguish three different varieties of scarlatina; viz., *scarlatinæ simplex*, in which there is a florid rash and little

Scarlet Fever

or no affection of the throat, *scarlatina anginosa*, in which both the skin and the throat are decidedly impetuous, and *scarlatina maligna*, in which the stress of the disease falls upon the throat. In malignant cases, the eruption, if it appear at all, is livid and parturient, and fades early; and it is attended with a feeble pulse, a cold skin, and extreme prostration of strength. Sometimes the patient sinks at once, and irretrievably, under the virulence of the poison, and life is extinguished in a few hours. The chance of recovery is much greater in anginous, when the eruption is florid and stands out well, but even here there are various ways in which it may prove fatal. The state of the throat is full of peril, becoming foul and sloughy, and many cases prove fatal in the second week of the disorder. Scarletina simplex is a very mild form of the disease and deviates only slightly from a state of health. Scarletina is also dangerous from its tendency to give rise to other complaints, as boils or strumous ulcers, various forms of scrofulous dropsy &c. Treatment.—In treating the simplest form of scarlet fever, little else is required than confinement to the house, regulation of the bowels, and the avoidance of all stimulating substances in the matter of diet. In angina, frequently, all that is necessary is to keep the bowels open by moderate laxatives, and to watch the progress of the complaint. If the heat of the surface is great and distressing, cold or tepid sponging may be adopted, and if the pulse is hard and strong, some leeches may be applied behind the ear. If delirium comes on, the scalp may require to be shaved and cold applied to it, and if the fever and delirium are violent, blood may have to be taken cautiously from the arm. In the worst form of this disease, all efforts to save the patient will often be unavailing. When the system seems to be overwhelmed with the strength of the poison, a liberal administration of wine and bark will be required to sustain the flagging powers until the deadly agency has in some measure passed away. As gargles for the throat a weak solution of chloride of soda or of nitrate of silver is very useful. A solution of chloride of potash in water (a drachm to a pint) is recommended as a drink in this disease. The bowels also require to be carefully watched, and great care is necessary to avoid cold during the period of convalescence. The poison of scarlatina is of a very subtle nature, and attaches itself tenaciously to bedding, carpets, clothes, &c. (See DISINFECTION.) The infecting power is probably greatest at the beginning of desquamation, or when the skin is coming off, and the danger of infection cannot be regarded as over till some days after desquamation has ceased. The patient should be separated from the rest of the family during the fever, and the room,

Scrofula

clothes, &c., thoroughly disinfected before being again used. (See Watson's Lectures on the Principles and Practice of Physic.)

Sciatica. *sciatica*, is a name often applied to all rheumatic affections about the hip joint and back of the thigh, but in strictness it applies only to a disease of the sciatic nerve. This is sometimes an inflammatory complaint requiring for its treatment cupping and blistering, sometimes it is clearly rheumatic, and then requires the mode of treatment adapted for such cases; sometimes it results from irritation within the pelvis, affecting the nerve before it emerges externally, and sometimes it is purely nervous and neuralgic.

Sciilla or Squill. (See URGIVEA.)

Scorpiarius (See SCROTALMUS.)

Scrobutus (See SCURVUS.)

Scrofulula, or KING'S EVIL, is a tedious and multiform disease, hereditary in its nature and one of the most characteristic marks of which is tendency to swelling of the glandular parts, which sometimes suppurate and discharge a viscid mucky matter, and are very difficult to heal. The name is said to be derived from the Latin *scrofa* or *scropha* a sow probably from the fancied resemblance of the swellings to a pig, and the term king's evil has been given to it from its being long believed to be curable by the royal touch. The persons in whom scrofulous disease is most likely to manifest itself are marked during childhood by pale and pasty complexion, large head, narrow chest, protuberant bellies, & fat at the fleshy muscles, and a languid and feeble circulation. It, however, often accompanies a variety of the sanguineous temperaments; also, and is indicated by light red hair, grey or blue eyes, with large and sluggish pupils, and long silky lashes, a semi-transparent brilliancy of skin and cheeks. This red colour is, however, easily changed by cold to purple or livid, and the extremities are subject to chilblains. Such children are oft extremely clever, and ready of apprehension, of eager tempers and warm affections lively, ardent, imaginative, and susceptible. It is frequent, also, though less common, in what is called the melancholic or bilious temperament, &c., in persons of dark, muddy complexions and harsh skin, in whom the mental and bodily energies are more sluggish and dull. The disease, however, frequently occurs in persons who do not exhibit any of these symptoms. It is one of those diseases that are in a very marked degree hereditary. Like other hereditary tendencies, it may sometimes skip over a generation or two, and reappear, just as family likeness do. The tendency may be so strong that no care will prevent its manifestation, or so faint as never to break out into actual mischief, if the exciting causes be warded off. Causes.—Among,

Scurf.

the exciting causes are insufficient nutriment, exposure to wet and cold, impurity of the atmosphere, the want of natural exercise, and mental disquietude. Climate exercises a very marked influence upon it, and there is none more favourable for its development than our own. A moist, cold, and variable climate is particularly favourable to its development, while, on the other hand, a hot or a very cold climate protects against it. Scurf usually manifests itself in indolent glandular tumours, frequently in the neck, at first free from pain and inflammation, but proceeding slowly to an inflammatory state, and gradually and generally, after a long time, forming an ulcer, which is extremely difficult to heal. In some cases the eyes and eyelids are the principal seat of the disease, having constantly a very inflamed aspect. The bones of scrofulous persons are also liable to disease, especially those of the spine; and generally the diseases and accidents that happen with comparatively little inconvenience to others, are productive of very troublesome and alarming consequences in scrofulous constitutions. The lungs are particularly liable to attack in such cases, giving rise to the formation of tubercles in that organ, which is so marked a feature in consumption. (*See PITRITUS.*) Treatment.—The treatment consists chiefly in rousing the tone of the system by moderate exercise in the open air, with suitable nourishment, sufficient clothing, and attention to the state of the bowels. Sea-bathing, if it can be borne, or sponging the skin with tepid salt-and-water, followed by diligent rubbing with coarse towels and the flesh-brush, are very beneficial. Much good is frequently derived from the use of cod-liver oil; and iodine is often found to be of benefit.

SURF. (*See DANDRUFF.*)

SCURVY., *skur'-ve* [*Lat. scorbutus*], is a disease which two centuries ago was endemic in all the northern countries of Europe, but which has been now almost entirely extinguished. Even as recently as the time of Lord Anson scurvy was so fatal that, during the first two years of his voyage, he lost more than two-fifths of his original crew. Symptoms.—The first indication of scurvy is usually a change in the complexion from its naturally healthy hue to a pale, slightly sallow, and dusky appearance, attended with great languor and despondency, and aversion to every kind of exercise. The patient is readily fatigued, and complains of pain in the muscles, especially of the legs and loins, similar to those produced by over-exertion. The gums soon become sore, and apt to bleed on the slightest touch, and on examination are found to be swollen and spongy, and of livid redness. As the disease advances, all these symptoms become more marked, the complexion acquires a more dusky and somewhat brownish hue; the

Secale.

debility increases, so that the least exertion causes breathlessness and palpitation, and not unfrequently an alarming syncope; the gums become more swollen and more livid, forming, in some cases, a black spongy mass, completely concealing the teeth, which frequently become loose, and drop out without undergoing decay; and the breath is remarkably offensive. The patient is also subject to hemorrhages, more particularly from the gums and nose, but often also from the intestines, lungs, or stomach. Ecchymoses also appear on the skin, in the form of petechial spots, particularly on the lower extremities, but frequently occurring also on the arms and trunk. Effusions of blood also take place under the skin in various parts, especially in the lower extremities, and around the seat of an old injury. These parts are painful when pressed or moved, and are much swollen. Their most common seat is the ham, where the swelling is often considerable, and always attended with stiffness and contraction of the knee-joint. Sometimes old wounds break out afresh, and a broken bone will become disunited, though it has been consolidated for some time. The natural secretions are scanty, the skin is dry and rough, and there is a suppression of perspiration. The appetite, however, continues good, and the powers of digestion are unimpaired; the intellect is unaffected, and in early stages the patient generally sleeps well. The tendency to swoon, however, is very great, and occasionally even the slightest motion produces fainting, which sometimes proves fatal. Scurvy is most common in winter or the beginning of spring. It is not contagious, neither is it caused by cold weather, by impurity of air, nor by the continued use of salt provisions, all of which have frequently been alleged. It is owing solely to the privation for a considerable length of time of fresh succulent vegetables, and is infallibly and rapidly cured by the administration of these or of lemon-juice. The latter is really a specific against scurvy, whether it be employed as a preventive or as a remedy. It supplies something to the blood which is essential to its healthy properties. As for the rest, fresh animal food, with wine, porter, or ale, is of advantage; but bleeding, blistering, or mercury in any form should be religiously avoided.

SIN SICKNESS. (*See SICKNESS.*)

SEBACEOUS [*Lat. sebum, suet*], a term applied to glands which secrete a sticky substance, and likewise to the matter secreted. These glands are situated in the skin, and are most numerous about the face and nose. (*See ACNE.*)

SECALÉ, se-kal'-é [*Lat.*], a gen. of the nat. ord. Gramineæ. *S. cereale*, the common rye, is much cultivated in the northern parts of the world for its grains. Rye-bread is very wholesome, and retains its freshness

Secretion.

for a much longer time than wheaten bread. Rye is subject to a disease called ergot, produced by the attack of fungi. These diseased grains are commonly known as *ergot of rye*, or *spurred rye*, and are used medicinally to excite uterine contractions in labour. The dose is from 20 to 30 grains.

SECRETION, *se-kre' shun* [Lat *secreto*], in Physiol., is that process by which materials are separated from the blood, and from the organs in which they are formed, for the purpose either of serving some ulterior object in the animal economy, or of being discharged from the body as excretion. Secretion is one of the natural functions of the living body, and is as necessary to health as nutrition. The secretions may be arranged into three sorts — (1) exhalations, (2) follicular secretions, and (3) glandular secretions. The exhalations take place as well within the body as at the skin, or in the mucous membranes, and are thus divided into external and internal. The follicles are divided into mucous and cutaneous, and into simple and compound. In almost all the points of the skin little openings exist, which are the orifices of small hollow organs with membranous sides, generally filled with an albuminous and fatty matter. The small organs are called the follicles of the skin. The glands however are the principal organs to which the office of secreting is more especially ascribed, and the number of them is considerable. The glandular secretions are of seven different sorts — namely, the tears, saliva, bile, pancreatic fluid, urine, semen, and milk.

SEDATIVE, *sed' i tiv* [Lat *sedatus*, calm], in Med., an agent which produces a direct depression of the action of the vascular system with little sensible evacuation. Inasmuch as their depressing effects are not preceded by any obvious excitement or increased movement of the heart or arteries, they differ from narcotics. Sedatives should be used with caution, in consequence of their depressing effects; and as most of them are active poisons, the dose should be strictly regulated. Those in more common use are aconitum, conium, digitalis, furocanthus lobata, tobacco, tartarized antimony, ether, chloroform.

SEIDEL'S POWDERS are two distinct powders, the one contained in a white paper, consisting of 2 drachms of Rochelle salt, and 40 grains of carbonate of soda, the other in a blue paper, consisting of 35 grains of tartaric acid. The contents of the first paper are to be dissolved in half a pint of spring water, and the contents of the blue paper to be added, and the mixture drunk during effervescence. This forms a grateful and cooling aperient.

SEITZ'S WATER is a slightly alkaline, highly acidulated mineral water, containing 4 grains of subcarbonate of soda, 2

Silver

grains of subcarbonate of magnesia, and 10 grains of muriate of soda, in 1 pint of water, impregnated with carbonic acid gas. It is cooling and aperient, recommended in certain disorders of the stomach and of the urinary organs, especially gravel.

SENNA (*See CASSIA*)

SERPENTARIA (*See ACHISTOLOCHIA*)

SERUM, (*See Blood*)

SIXTON (*See ISSUE*)

SEVUM PREPARATUM [prepared suet] is the internal fat of the abdomen of the sheep, purified by melting and straining. It is used in cantharides plaster and ointment of mercury.

SHAMPOOING (*See BATHS*)

SHINGLES (*See HERPES*)

SIALOGOGUES [*Gr sialon* saliva, and *ago*, I drive] are medicines which increase the flow of the saliva, as mercury.

SICKNESS is an uneasy sensation experienced in different parts of the body, with an inclination to vomit. It may arise from various causes, but more particularly from a disordered state of the stomach. Certain unwanted motions of the body, as swinging, sliding, &c., may occasion sickness, and it is frequently symptomatic of some more serious malady, as fever. The cure will in great measure depend upon the cause. When it proceeds from a disordered state of the stomach, a purgative or an emetic will afford relief. For sea sickness a couple of drops of creosote on a piece of sugar is perhaps the best remedy, and care should be taken also to lie near the centre of the vessel, where the motion is least.

SLEAR, nle' (*See ERY*)

SILVER, *si' l'ver* [*Bax solfer, silvur*],—symbol Ag [Lat *argentum*], equiv 108 spec grav 10.53.—This metal has been known from the earliest ages, and has always been highly valued for its rarity, beauty, lustre and permanence. It is between iron and copper in point of hardness, and is very tenacious. It fuses at about 1,875° Fahr., expanding forcibly at the moment of solidification. It has a powerful affinity for sulphur, speedily turning black in atmospheres containing notable portions of sulphuretted hydrogen. Silver occurs in nature in the native state, crystallized in cubes and forms derived therefrom. The most abundant silver ore is the sulphide, which is the principal material occurring in the silver mines of Mexico, Peru, Norway, Bohemia, and Hungary. The *nitrate of silver* is made by dissolving silver in strong nitric acid. It crystallizes in square anhydrous colourless tables, and dissolves in an equal weight of water. It fuses when heated, and may be cast in cylindrical moulds, in which form it is used by surgeons as an escharotic, under the popular name of lunar caustic. Medicinally it is tonic and antispasmodic, and is recommended in chronic diseases of the stomach attended with pain and vomiting, also ap-

Simaruba.

plied externally to wounds, ulcers, &c. Dose, $\frac{1}{6}$ to $\frac{1}{3}$ of a grain. 2 to 4 grains to an ounce of water is employed for lotions or injections. There are three *oxides of silver*—the sub-oxide, the protoxide, and the per-oxide. The protoxide is a powerful base, combining with the acids to form neutral salts. It is soluble to a slight extent in water, to which it communicates a feeble alkaline reaction. It has the same general medicinal effects as the nitrate, without being excharotic, and is a valuable astringent in diarrhoea. Dose, $\frac{1}{2}$ to 2 grains in form of pill.

SIMARUBA, *sim-a-rub'-ba*, the typical gen. of the nat. ord. *Simarubaceæ*. The species *S. amara* is a native of South America and the West Indian Islands. The bark of the root acts as a tonic, and has been employed medicinally in diarrhoea, dysentery, &c. Dose, 15 to 30 grains; of infusion (3 drachms to 1 pint of boiling water), 1 to 2 ounces.

SINAPIS, *sin'-a-nis* [Lat.], mustard, a gen. of the nat. ord. *Cruciferæ*. The seeds of the *S. nigra* are of dark reddish-brown colour, and are known as *black mustard-seeds*; those of *S. alba* are of a yellowish colour, and are termed *white mustard-seeds*. The flour of mustard is prepared from a mixture of the two kinds, usually in the proportion of two parts black and three parts white. Internally, flour of mustard is used as a stimulant, diuretic, and emetic; externally, as an irritant and rubefacient. White mustard-seeds are often taken in an entire state as stimulants in dyspepsia. Mustard poultice is prepared by mixing $\frac{1}{2}$ ounces linseed meal gradually with 10 fluid ounces of boiling water, and adding $\frac{1}{2}$ ounces of mustard in powder, with constant stirring.

SINGULUS. (*See Hiccup*)

SKIN, *skin* [Sax. *swin*], is that membrane of variable thickness which covers the whole body externally, and extends inwards into all the natural openings, where it changes its properties, becoming soft and moist, and hence known as mucous membrane. The skin is generally described as composed of three layers,—the *cuticle*, the *rete mucosum*, and the *cutis vera*, the last being the most internal. The cutis (dermis), or true skin, consists of two layers, of which the deeper is called the *corium*, and the more superficial the papillary layer. The corium is composed of numerous fibres closely interlaced, and forming a smooth surface for the support of the papillary layer. It varies in thickness, being, as a general rule, thick on the exposed parts and thin on the protected. The papillary layer is soft, and formed by numerous papillæ, which cover its whole surface. It contains the expansions of the sensitive nerves. The rete mucosum (mucous network) lies immediately over the cutis, and in some measure diminishes the inequalities of the surface, being thicker between the papillæ and thinner on their sum-

Skin, Diseases of the.

mites. It is composed of minute nucleated cells, and is almost pulpy in consistence. It is very slightly developed in the white races, but is very distinct and thick in those that are darker, the cells, which are filled with a pigment, being that which gives the dark colour to their skin. The cuticle, scarfskin, or epidermis, is a disorganized scaly substance, serving to protect from injury the more delicate cutis. It is thickest on the most exposed parts; and on the palms of the hands and soles of the feet it consists of several layers. The skin performs various important functions. It is the seat of common sensation, and is furnished with numerous pores or openings, which give passage to the sweat and other exhalations.

SKIN, DISEASES OF THE, are of very different kinds and of very different degrees of importance. Some are dangerous to life, others present no danger; some are attended with fever and rapid in their course, others are chronic and obstinate; some are disfiguring, some contagious; and so on. Various attempts have been made to arrange and classify the different diseases of the skin. Dr. Willan divides them into eight orders, distinguished from each other solely by the appearances upon the skin, as follows:—1. *Papulae*, or pimples, little elevations of the cuticle, of a red colour, and not containing any fluid, as in the earliest stages of small-pox. 2. *Squamæ*, or scales, small hard, thickened, opaque, whitish patches of unhealthy cuticle, as in leprosy. 3. *Exanthemata*, or rashes, superficial red patches, varying in figure and size, and irregularly diffused over the surface, as in measles, scarlet fever, &c. 4. *Bullaæ*, blebs or miniature blisters, as sometimes occur in erysipelas. 5. *Pustulae*, or pustules, circumscribed elevations of the cuticle, containing pus, and having red inflamed bases, as in the eruption of small-pox when at its height and maturity. 6. *Vesiculae*, or vesicles, small elevations of the cuticle, covering a fluid usually at first clear and colourless, but becoming afterwards opaque and whitish, or nearly, as in cow-pox and chicken-pox. 7. *Tubercula*, tubercles, small hard superficial tumours, circumscribed and permanent, or, if they suppurate at all, it is only partially. 8. *Maculae*, spots or patches, arising from excess or deficiency of the colouring matter of the skin, and frequently occurring congenitally, or connected with some slight disorder of the digestive organs or of the general health. Such a classification as this is very useful for the purpose of distinguishing the different appearances, but it is of little further service. A complaint which is popular to-day may be vesicular to-morrow, and pustular the day following. Some arrangement directing the attention more entirely to the relations and constitutional and visceral dependencies of these affections, and leading to rational and

Skull.

successful methods of cure, is still wanted. (See ACNE, IMPETIGO, POX, HERPES, ITCH, RINGWORM, &c.)

SKULL. *skull* [Sw. *skalle*, Lat. *cranium*], is that hard bony case which encloses the brain and forms the head. (See ANATOMY.)

SLOW. (See PAVUS.)

SMALL-POX. *small pox* [Lat. *variola*], is an eruptive febrile disease, which, happily, is not now nearly so prevalent as it once was. *Symptoms.*—This disease commonly commences with the usual febrile symptoms; rigors, pain in the back and loins, great prostration of strength, followed by heat and dryness of the skin, a hard and frequent pulse, loss of appetite, pain in the epigastrium, with nausea, vomiting, headache, and sometimes delirium or convulsions. About the third day, an eruption of small hard red-coloured pimplies makes its appearance about the face and neck, and gradually extends over the trunk and extremities. The pimplies gradually ripen into pustules, which, on the eighth day, generally begin to break, and crusts or scabs form, these last falling off in four or five days more. The severity of the disease varies much in different instances, but is almost always in direct relation to the quantity of the eruption. When the pustules are numerous, they run together, and form an irregular outline; when fewer, they are distinct, and of a regularly circumscribed circular form. The former is technically called *variola confluenta*, the other *variola discreti*; the former being safer free from danger, the latter seldom or never dangerous. The most important difference between the two forms is in the secondary fever, which sets in about the eighth day of the eruption, or just when the maturation of the pustules is complete. It is slightly marked in the distinct small-pox, but generally very intense and perilous in most instances of the confluent: during the period at which death oftenest occurs. Both kinds are accompanied by sore throat, salivation, and frequently diarrhoea. A peculiar disagreeable odour also usually proceeds from the body of the patient. Like measles and scarlatina, this disease frequently gives rise to others of a troublesome or dangerous nature, as glandular swellings, abscesses, pleurisy, loss of sight, consumption, &c. Small-pox is the effect of specific contagion, communicated by contact, or through the air. There is no disease of which the contagion is so sure, and which operates at a greater distance, than that of small-pox; but it rarely attacks the same individual more than once. The poison begins to manifest itself about twelve days after its absorption. It is not a little remarkable that a small quantity of the matter taken from a pustule and inserted beneath the skin of a healthy individual gives rise to a much milder form of the disease than would arise in the natural way, i.e., by inhaling

Soap.

the contagious poison; and to this fact are we indebted for the great means of guarding against the disease. (See INOCULATION, VACCINATION.) Small-pox occurring in persons unprotected by inoculation or vaccination is fatal on the average to one in every three; whilst in those attacked after efficient vaccination the mortality is very small, probably not more than two or three per cent. *Treatment.*—The treatment required in small-pox does not differ particularly from that of ordinary fever; the bowels requiring to be kept moderately open, free ventilation established, and the skin, if necessary, kept cool by sponging it with tepid vinegar and water. Small doses of mercury are often serviceable in moderating the febrile symptoms. The strength requires to be attended to, and, if much reduced, quinine, wine, and nourishing diet are to be administered. Blood-letting is almost always attended with very great danger, and not to be had recourse to if it can possibly be avoided. The complications of this disease require to be carefully watched; and if the throat be much affected, a blister should be applied to the neck, and gargles or infusion of roses used. To relieve the intolerable itching the pustules may be smeared with cold cream, and after they have burst some dry powder should be dusted over them to absorb the matter. The application of colloidion over the face and hands is said to prevent pitting.

SMELL. (See NOSE.)

SMILAX. *smil'-iks* [Gr.], Sarsaparilla, the typical gen. of the nat. ord. *Smilacaceae*. The roots of several species or varieties constitute the sarsaparilla of the Materia Medica. Sarsaparilla is regarded as an alternative in venereal and skin diseases, rheumatism, &c. The kind most valued is that known as Jamaica sarsaparilla, obtained from the species *S. officinalis*. It is not the produce of Jamaica, but of Central America and the northern parts of South America. The decoction is formed by digesting for an hour $\frac{1}{2}$ ounce of the root, cut transversely, in $\frac{1}{2}$ pint of boiling distilled water, then boiling for ten minutes, cooling, and straining to make a pint. Dose, 2 to 10 fluid ounces. The compound decoction contains in addition $\frac{1}{4}$ ounce each of sassafras root in chips, guaiacum wood turnings, and fresh liquorice root bruised, and 60 grains of myrrh bark. Dose same as above. Dose of liquid extract, 2 to 4 fluid drachms.

SMOKING. (See TOBACCO.)

SNAKE-ROOT. (See POLYGALA.)

SOAP, *sapo* [Sax. *swe*].—Strictly speaking, a soap may be defined as a salt consisting of a fatty acid in combination with a metallic base. In common parlance, however, it is applied to the soluble salts formed by the union of the fatty acids with the alkalies. Ordinary soaps are of two kinds,—*soft* and *hard*. Soft soap is a combination of some

Soda.

is the only substance with potash, and contains an excess of alkali. The hard soaps are combinations of the fatty acids with soda. Soap is frequently employed in pharmacy. Hard, or white Castile soap is diuretic, antacid, and antilithic, being inferior, and frequent doses very efficient in removing gall-stones. Combined with rhubarb, it is useful in dyspepsia attended with constipation or torpor of the liver. Dose, 5 to 15 grains. It is also an ingredient in various plasters and pills. Soap-plaster is formed by adding 7 ounces of hard soap and 1 ounce of resin to 2 pounds of lead plaster, melted by a gentle heat and the evaporation to the proper consistency will instantaneously.

SODA, *NaO*, the protoxide of the alkali metal sodium (see Sodium). It is procured in an impure state by burning the metal in dry air or oxy-hydrogen to colour, readily decomposing water from the air which cannot be effected by heat. In this state it forms hydrates of soda or carbonates. It is similar in its properties to hydride of potash. There are three carbonates of soda, the ordinary, a carbonate or common washing-soda, the sesquicarbonate, and the bicarbonate. The last occurs in commerce as a white crystalline powder, which is gradually converted into the sesquicarbonate by exposure to the air. It is much used in medicine having a much less unpleasant taste than either the mono- or sesquicarbonate, from which it is readily distinguished by giving no precipitate with the mineral salts. Soda very much resembles potash in its medicinal qualities, the following are the principal pharmaceutical preparations of it—*Caudicula*, obtained by boiling down rapidly the solution of soda in a silver or clear iron vessel until there remains a fluid of oily consistency, a drop of which when imbibed on a warmed glass rod solidifies on cooling. Then pour the fluid in a cup in silver or iron plate and when solidified break in pieces and preserve in meen glass st apothecary bottles. *Tartarized soda* (6 ounces of acid tritrate of potash, 12 ounces of carbonate of soda, and 4 pints of boiling distilled water, boiled, filtered, and allowed to crystallize) forms a mild, cooling purgative for delicate stomachs. Dose, 2 to 4 drachms. The *mineral* (sodium is acid, 10 ounces, nitrate of soda, 8 $\frac{1}{2}$ ounces, dried carb-mate of soda, 5 $\frac{1}{2}$ ounces, boiling distilled water, 35 ounces) is used in skin diseases, and other cases where arsenic is indicated. Dose, 1 to 1 $\frac{1}{2}$ of a grain. The *bear's oil* is antacid, antilithic, and diuretic, useful in dyspepsia, gout, and hemicramps. Dose, 10 to 30 grains. The *effervescing solution*, or soda-water, is made by dissolving 30 grains of the bicarbonate in 1 pint of water, filtering the solution, and then passing into it as much pure washed carbonic acid gas

Solanum.

(obtained by the action of sulphuric acid on chalk) as can be introduced by a pressure of seven atmospheres. The carbonate is antacid, diuretic, and antilithic, and is used chiefly to counteract acidity of the stomach in dyspepsia, &c. Dose, 5 to 30 grains. The *effervescent citro-tartrate*, or *granular effervescent magnesia*, is prepared by mixing thoroughly 17 ounces of bicarbonate of soda in powder, 8 ounces of tartaric acid in powder, and 6 ounces of citric acid in powder, and placing them in a dish or pan of suitable form heated to between 200° and 220°, and when the particles begin to aggregate, stirring them assiduously until they assume a granular form, then, by means of suitable sieves, separate the granules of suitable size, and preserve in well closed bottles. Dose, 2 to 4 drachms. The phosphate is a mild purgative, well suited to children and persons of delicate stomach. Dose, $\frac{1}{2}$ to 1 ounce. The *sulfate*, popularly known as Glauber's salt, is an excellent cooling aperient in doses of $\frac{1}{2}$ to 1 ounce. Of the *talc*, the dose is from 1 to 5 grains.

Sodium et de am, in Chem.,—symbol Na (sodium), equiv. 22.97, spec. grav. 0.972, fusing point 80° Fahr.—the alkaline metal of which soda is the oxide. It was discovered in 1707 by Sir H. Blackhey Davy. It occurs in large quantities in nature, chiefly in combination with chlorine, as sea-salt. Sodium is a yellowish-white lustrous metal, and so soft that it may be readily cut with a knife or moulded with the fingers. Exposed to the air, it tarnishes immediately, becoming covered with a film of soda, it is therefore preserved in petroleum or some other hydrocarbon. The two salts, bromide and iodide of sodium, occur sparingly in sea-water and in the ashes of sea-plants. They are the principal commercial sources of iodine and bromine. The chloride of sodium constitutes the rock-salt of commerce, or common table-salt.

BOLANIUM, *so lat'num*, the typical genus of the nat. ord. *Solanaceæ*. The tuber of *S. tuberosum* is the common potato, so largely used as food in temperate climates. The potato-plant is supposed to be a native of South America. It was first brought to England from Virginia by the colonists of Sir Walter Raleigh's expedition, who returned in 1586. Starch is largely obtained from potatoes, and is used for food under the names of English arrow root, nutritious farina, &c. A decoction of the stem and leaves of the potato plant has been used as an aperientive in cutaneous diseases, and an extract of the herb has been also employed as a narcotic and antispasmodic. The medicinal properties of the plant are chiefly due to the presence of a alkaloid, called solanine, which has powerful narcotic properties. This has been detected in all parts of the plant, but in the tuber only traces of it are found, and the eat entirely

Soporific.

removed by the process of boiling and preparing for the table.

SOPORIFIC. (*See NARCOTICS.*)
SORREL. (*See RUMEX.*)

SPASM, *spasms* [Gr. *spasmos*, from *spao*, I draw], is an involuntary contraction of muscular tissue, or that state of contraction of the muscles which is not spontaneously disposed to alternate with relaxation; when the contractions alternate with relaxation, and are frequently and preternaturally repeated, they are called convulsions. Spasms are distinguished as clonic and tonic; the contractions in the former alternating with relaxations, as in epilepsy, but in the latter remaining fixed, as in lock-jaw. (*See EPILEPSY, CONVULSIONS, CRAMP, TETANUS, &c.*)

SPERMINT. (*See MINTHA.*)
SPERMACCI. (*See CRETACEUM.*)

SPHENOID BONE. (*See NOSE, ANATOMY.*)
SPHINCTER [*Gr. sphingo*, I compress], the name given to certain muscles whose office it is to shut or close the aperture round which they are placed, as *sphincter ani*, &c.

SPINE, SPINAL CORD, *spina* [Lat. *spina*, a thorn].—The spine is the long articulated bony column at the back of the trunk, extending downwards from the head its entire length. It forms the basis of support of the trunk, and connects all the other parts of the frame. Its interior is hollow, and contains the spinal cord; its lower end rests on the pelvis. It is usually divided into two portions, a superior and inferior; the former flexible, and composed of twenty-four bones, or true vertebrae; the latter more fixed, and composed of nine bones, or false vertebrae. The true vertebrae are divided into cervical, dorsal, and lumbar; the false form the os sacrum and coccyx. Each vertebra consists of two parts, the body of the bone and the arch; the former being solid, convex before and concave behind; the latter being formed of two pedicles and two laminae, supporting seven processes; namely, four articular, two transverse, and one spinous process. The bodies of the vertebrae are piled one upon another, forming a strong pillar for the support of the cranium and trunk; the arches forming behind a hollow cylinder for the protection of the spinal cord. Between each pair of vertebrae apertures exist, through which the spinal nerves pass from the cord. The several vertebrae are united together by means of a substance compressible like cork, which is firmest and hardest externally, and gradually becomes thinner and softer, till at length in the centre it is in the form of a mucous substance. There are likewise many strong ligaments which unite the bones of the spine to each other. The first and second cervical vertebrae differ from the other vertebrae of the spine, to allow of the various movements of the head. The first is called the atlas, from its supporting the head, and forms a kind of bony

Spine.

ring; the second the dentata, from the tooth-like process on the upper part of its body, which articulates with the former. The spinal cord is that portion of the cerebro-spinal nervous system which is contained in the spinal canal. Its length is usually about sixteen or seventeen inches, terminating in the adult in a slender filament of grey substance about the lower border of the body of the first lumbar vertebra. Its membranes are three in number. The most external is the dura mater, a strong filamentous membrane, which forms a loose sheath round the cord. The most internal is the pia mater, a colloid-vascular membrane, which closely invests the entire surface of the cord; while between the two is the arachnoid membrane, an intermediate serous sac, which envelopes the cord, and is then reflected on the inner surface of the dura mater. In form, the cord is a flattened cylinder. Its anterior surface presents along the middle line a longitudinal fissure, called the anterior median fissure; and its posterior surface another, called the posterior median fissure. These fissures divide the cord into two symmetrical halves, which are united in the middle line throughout their entire length by a transverse band of nervous substance called the commissure. There are, besides, several lateral fissures very slightly defined. When cut transversely, the spinal cord is seen to consist of white and grey nervous matter. The former is situated externally, and constitutes its chief portion; the latter occupies its centre, and is so arranged as to present two crescentic masses placed one in each lateral half of the cord, united together by a transverse band of grey matter—the grey commissure. The nerves of the spinal cord consist of thirty-one pairs issuing from the sides of the whole length of the cord, their number corresponding with the intervertebral foramina through which they pass. Each nerve arises by two roots, an anterior and a posterior, the latter being the larger. The roots emerge through separate apertures of the sheath of dura mater, and directly after their emergence a ganglion is formed on the posterior root, the anterior root lying in contact with the anterior surface of the ganglion, but none of their fibres intermingling. Immediately beyond the ganglion the two roots coalesce, and by mingling their fibres, form a compound or mixed spinal nerve, which, after issuing from the intervertebral canal, divides into an anterior and posterior branch, each containing fibres from both roots. The spinal cord has the power of conducting impressions made upon the spinal sensitive nerves to the brain, where alone they can be perceived by the mind; and through it also the stimulus of the will applied to the brain excites the action of the muscles supplied from it with motor nerves. It is also a nervous centre, and has the power of com-

Spine, Diseases of the.

municating impressions from sensitive to motor nerve-fibres independent of the will, which is usually termed the reflex function of the spinal cord.

SPINE, DISEASES OF THE.—The spinal cord, like other parts of the body, is subject to various diseases, one of the most common of which is inflammation, which may be either acute or chronic, affecting the cord itself or its membranes. It is characterized by pain more or less acute, extending throughout the length of the spine, or confined to a certain portion of it. It is much increased by every movement of the spine, and in many cases is more or less intermittent. It frequently also gives rise to spasmodic or paralytic affections of various parts. It is always a highly dangerous disease, and in general requires similar treatment with inflammation of the brain. (*See BRAIN, DISEASES OF THE.*) In regard to diseases of the spine, it is well to keep in mind that very many of them are merely a certain form of hysteria. According to Dr. Skey, not more than one case in twenty of spinal affection in young persons are real diseases. When proceeding from hysteria, tonics, as quinine, iron, wine, &c., should be freely given; and sedatives, as opium, applied to the part, if necessary.—(*See "Hysteria,"* by F. C. Skey.)

SPIRITS [Lat. *spiritus*] include alcohol and spirition solutions of vegetable matters formed by simple mixture, by maceration, and by distillation. As medicinal agents, spirits are stimulant and cordial. They are frequently employed to cover the taste or flavour of disagreeable medicines, or to counteract the tendency of some to produce nausea. Rectified spirit is about one-third stronger than proof spirit. (*See ALCOHOL.*)

SPLEEN, *spleen* [Gr. *splen*], is a spongy viscous, of a livid colour, oval in figure, and situated in the left hypochondriac region, between the eleventh and twelfth false ribs. It is convex externally and concave internally, and its weight in the healthy adult is from four to ten ounces. It is largely composed of cells, but its internal structure is not well understood, neither have its uses been ascertained; but it would seem to be in some way of use to the stomach during the process of digestion.

SPLINT is a long piece of wood, tin, or strong paste-board, used for keeping broken bones in position, and preventing their ends from moving so as to interfere with the process of reuniting.

SPUTTING OF BLOOD. [*See HEMOPTYSIS.*]

SPRAIN is an injury done to the ligaments of a joint, usually at the wrist or ankle, by contortion or over-straining. Sprains are usually attended with great pain and swelling of the part, and sometimes produce fainting and vomiting. The treatment consists in endeavouring to check the inflammatory tendency, and reduce the swelling, and in order to this, cold applications and

Stimulants.

astringent lotions, as vinegar and water, spirits and water, &c., should be employed. If the inflammation and swelling are great, leeches should be applied; and if there is much general fever, purgatives will also be necessary. When the swelling has gone off, the joint should be well rubbed with some stimulating liniment. During the process of cure, the part should be kept at rest.

SCQUILL. (*See URGINAL.*)

SCIQUINTING, *skwint-ing* [Lat. *strabismus*], is a disease of the eyes, in which they do not move in harmony with each other; hence the optic axes are not parallel, and a disturbance of vision is the consequence. Squinting may be confined to one eye, or it may affect both, and it may be in any direction. If the sight of both eyes is equally good, or nearly so, then all objects are seen double; but if the sight of one is much better than that of the other, the mind only attends to the more vivid impression, and disregards the weaker.* Squinting is owing to some affection of the nerves or muscles of the eye. In most cases, it admits of cure by the operation of dividing the muscle by which the distortion is produced.

STANUM. (*See TRX.*)

STERNUM, *sternum* [fr. *sternon*], the breast-bone, an oblong, flat, irregularly shaped bone, placed at the fore part of the thorax. In the young subject, it consists of a number of bones, which become united in the adult, when it consist of three, and sometimes of two, or even of one bone. It serves for the articulation of the seven upper or true ribs on each side, and is of use in aiding respiration, and defends the heart and lungs.

STETHOSCOPE, *steth'-os-kope* [Gr. *stethos*, the chest, and *skopeo*, I explore], is the name of an instrument invented by M. Laennec, of Paris, in 1823, and of valuable aid in the process of auscultation (which see). It consists of a tube, about ten inches in length, made of wood or guita-percha, widening considerably at one end, and but slightly at the other. The wide end is applied to the chest or other part of the patient, the physician putting his ear to the other end; and from the sounds emitted by the heart, lungs, &c., the state of these parts may be ascertained.

STIMULANTS [Lat. *stimulo*, I stir up] are medicines which possess the power of exciting the nervous energies and through them the other bodily functions. They are commonly distinguished as diffusive stimulants, or such as affect similarly all parts of the system, and special stimulants, or such as act more particularly on special parts of organs. Stimulants constitute a very important class of medicines, useful in all cases of debility unaccompanied by inflammation, and especially in the last stages of many grave diseases, when life appears to be about to terminate. They require, however, to be used with caution, and their

Stomach

effects watched. The more common are wine, brandy, spirits, ether, ammonia, spices, volatile oils, and resins of various kinds.

STOMACH, *stum'-ăk* [Gr. *stomachos*, also *gaster*], is the large membranous receptacle which receives the food from the oesophagus, and within which it is acted upon by the gastric juice and converted into chyme. It is situated in the left hypochondriac and epigastric regions, and when distended it has the shape of an irregular cone having a rounded base and being curved upon itself. The left extremity is the larger, and is called the greater or splenic end of the stomach; the right or small end being called the pyloric. The oesophagus terminates in the stomach two or three inches from the great extremity by the cardiac orifice, while by the pyloric orifice at the other end, the ducts of the duodenum enter. When moderately filled, the stomach is about ten or twelve inches in length, and its diameter at the widest part about four inches. The walls of the stomach consist of four distinct coats held together by fine areolar tissue, and named, in order from without inward, the serous, muscular, areolar, and mucous coats. By some the areolar is not reckoned as a distinct coat. The first of these is thin, smooth, transparent, elastic membrane, derived from the peritoneum. The muscular coat is very thick, and composed of three sets of fibres, the longitudinal, circular, and oblique which form three layers. The areolar and fibrous coat is a tolerably distinct layer, placed between the muscular and mucous coat, and connected with both. The last is a smooth, soft, rather thick and pulpy membrane, loosely connected with the muscular coat, and covered with exuding and inhaling vessels. At the pyloric orifice leading from the stomach into the duodenum, there is a sphincter muscle which contracts the aperture and prevents the passage of any matter into the intestines until properly digested. The food is propelled along the oesophagus, and enters the stomach in successive waves through its cardiac orifice. It is then subjected to a peculiar peristaltic motion, having for its object to produce a thorough intermixture of the gastric fluid with the alimentary mass, and to expel its watery portion which has been sufficiently reduced from the remainder. This motion causes not only a constant agitation or churning of the contents, but also moves them slowly along from one extremity to the other. These revolutions are completed in from one to three minutes, being slower at first than after chymification has more advanced. The passage of the chyme or product of the gastric digestion through the pyloric orifice into the commencement of the intestinal tube is at first slow, but when the digestive process is nearly complete, it is transmitted in much larger quantities. (See Digestion, Gastric juice.)

Sudorification

STOOL (See *Caecal*)

STOMACH (See *Gastric*)

STOMATISM (See *Squinting*)

STOMONIUM (See *Duodena*)

STOMYCHIA, of the nature of scrofula (See *Scrofula*)

STREPTOCYANINE, *strept'ineen* [Gr.], one of the alkaloids found in the *Streptomyces viridans*, and the *Streptomyces Janet*. It ignites at 260°, and company with *bromine* and *guanidine* it forms one of the most powerful of the vegetable bases precipitating many of the metallic oxides from their salts, and thus it dissolves in 7 c.c. of 11% hydrochloric acid in intensely bitter solution, which is still retained even when diluted with 100 parts of water. With the acids it is well decomposed, which are mostly crystallized in little minute needles. In the third to the twelfth hour it is set to tanin in the sun with excellent action on the hair of the dog. If six or seven drops of the extract are applied to two or three small pieces of filter paper, it produces a local paralysis of the heart of the animal. The animal dies either in delirium or in a minute. The extract (1 c.c. of 10% in methylecyste) diminishes the dilation of the pupil, and diminishes the reflexes of the optic nerve, and dulls the sense of smell. It is given in doses of 0.05 to 0.1 gram.

STREPTOCYANIN (See *Streptocyanine*)

STREPTOCYANINE contains the same principle as most of the alkaloids of the genus *Streptomyces*, the best known being streptomycin, the well-known alkaloid of *Streptomyces griseus* called griseofulvin. *S. officinale*, a native of Greece, the Levant and Asia Minor, yields the source of the well-known classical *strepsin*. The product now called liquid *strepsin* comes from a species of the genus *Streptomyces*.

STREPTOCYSTICUS [*I. constans*] a term applied to those substances which possess the power of stopping haemorrhage.

STREPTOCYSTINE, the name given of the unit and derivative of *B. licheniformis* the well-known *lichen* or *oxidation* called *guan-benjamin*. *S. officinale*, a native of Greece, the Levant and Asia Minor, yields the source of the well-known classical *strepsin*. The product now called liquid *strepsin* comes from a species of the genus *Streptomyces*.

STREPTOCYTIC, CORROSIVE (See *MERCURY, CHLORIDE OF*)

STREPSIN, a thin termifying juice, as sucrose, in fact of hen's egg, *leucos taraxaci*, juice of dandelion.

STREPTOCYSTINE [*I. farcinis*] is the agent of cholera or producer death by the interruption of the heart. In ordinary ways it is which will cut on my be effected.

• ፭፻፲

at which and the respiration
of fixed air or carbonic acid. In
every case of such item our attempts
at ventilation shall be three (3) to renew
the air every hour of the time to be
spent with the 13 experiments wanted
in air by means of the
cylindrical timber and the brush
in the hole of the timber in the
hollowed out part of the lever
and the cylinder to hold the
soil. (See in HANDBK.)
So I will bring along
the 13 experiments
and the apparatus.
I will bring along Milk
and all I think will shortly be
needed for these experiments
and in different sizes to
use so as to fit the hole with
the size of the hollow
reservoir after it has been exclu-
sively filled, when
done (See in HANDBK.) so
many times off the cylinder
by the lever. At all
times I will have the
cylinder so placed
that the air may be
easily got out of the
cylinder by the lever
that it may not be molested
when I turn it over the
lever being held under
the cylinder.

Sulphurous Acid.

SULPHURETTED HYDROGEN, *sub-fu-ret'-ted*,
the familiar term for hydrosulphuric acid.

Sulphuric Acid, *sul'fúrik*, oil of vitriol, vitriol, SO_4 , is formed by the oxidation of sulphurous acid, or some other oxide of sulphur. In its perfectly anhydrous condition, it occurs as a white crystalline fibrous mass; and it is found in the air, and is very dangerous, exploding violently when thrown into water, thereby becoming sulphuric acid. It is in wood, paper, sugar, and other animal and vegetable bodies, by abstracting water from them. It melts at 65° Fahr., and boils at 101° Fahr., forming a colourless vapour. It possesses no acid properties whatever, and is not regarded as such by the followers of Leibnitz, by whom it is called sulphuric anhydride. The ordinary strong oil of vitriol commonly contains an equivalent of anhydrous sulphuric acid, united to an equivalent of water, $\text{SO}_3\text{H}_2\text{O}$. When pure, it is a heavy, oily, colourless, odorous liquid, having a specific gravity of 1.842. Its affinity for water is very great, doubling its weight by the absorption of vapour from the air.

Sulphuric acid is the starting point of many important chemical manufacture. Acetic, nitric, and hydrochloric acids are made by its action, and its salts, sulphates, are among the most important chemicals used in the laboratory. Sulphuric acid is a powerful caustic, burning and destroying the parts with which it comes in contact. Thus in a large dose or undiluted it is a violent corrosive poison. In case of poisoning magnesium or chalk is the most suitable antidote to be administered. In small doses, properly diluted sulphuric acid is tonic, refrigerant, astringent, in flight appetite, and promoting digestion. Dilute sulphuric acid is formed by mixing 7 oz. of the acid with 77 oz. of distilled water, and when cooled to 60° adding in 1 pint, so as to make 83½ fluid oz. Do 5 to 10 minims. The Aromatic Sulphuric Acid or Linum of Tintori is formed by mixing gradually 3 fluid oz. of sulphuric acid with 2 pints of rectified spirit, then adding 2 oz. of cinnamon bark and 12 oz. of ginger both in coarse powder, macerating for 7 days, and then filtering. Rose, 5 to 10 minims.

Sulphuric Acid, or Chem., SO₃, is acid formed by the union of an equivalent of sulphur with two of oxygen in a variety of ways; the most familiar being its production during the combustion of sulphur in the open air or in oxygen. The gas produced is endowed with the properties of a weak acid. It has a pungent suffocating smell, and when in a concentrated form cannot be breathed with impunity. It is an inflammable and extinguishes burning brands. It dissolves easily in water, which

Sumbul Root.

takes up between forty and fifty times its bulk of the gas. The solution has the smell and taste of the gas itself, and becomes gradually converted into sulphuric acid, from absorbing oxygen from the air. At ordinary temperatures, sulphurous acid is a gas; but it may be readily condensed into a liquid by a pressure of three atmospheres, or by a freezing mixture of ice and salt. Sulphurous acid is a powerful deodorizing and disinfecting agent, being destructive to minute vegetable and animal organisms. It is employed externally in the form of baths for diseases of the skin, and is also used internally for the same purpose. It is also valuable in diseases of the stomach, particularly when owing to fungous growth, as *sarcina ventriculi*. Dose, $\frac{1}{2}$ to 1 fluid drachm in water.

SUMBUL Root has recently come into use medicinally in this country, but the plant to which it belongs is not known. It is imported from India in slices of 2 to 4 inches in diameter, possessing the odour of musk. It is used as a nervous stimulant in low typhoid fevers, and is also recommended in epilepsy, hysteria, and delirium tremens. It is commonly given in the form of tincture ($2\frac{1}{2}$ oz. in coarse powder to 1 pint of proof spirit) in doses of 10 to 30 minims.

SUN-STROKE, or *COUR DE SOLEIL*, *sun-stroke*, is a disease affecting those who are exposed to the direct beams of a hot sun, particularly during any labour or active exercise. It is not uncommon among our troops in India, in long marches. They fall down insensible, and often die in a very short time. The nature of this complaint is not well understood. According to some, it is a sort of apoplexy, while others hold that it is more of the nature of concussion. It would appear that the sun's rays act upon the brain like a shock, suddenly and extensively influencing the nervous system, and arresting the movements of the heart. The natives of India adopt the system of pouring cold water upon the head in such cases. Stimulants, as rum-and-water, are also found to be of benefit, while bleeding, on the other hand, is not recommended.

SUPPOSITORY [Lat. *suppositorium*] is a medicine put into the rectum there to remain and dissolve gradually in order to affect the lower intestine, or through it the system generally. It is a rounded and usually elongated mass, and the active medicine is combined with some suitable substance that will retain its shape and dissolve gradually. The pharmacopoeical suppositories are tannic acid, mercurial ointment, morphine, and acetate of lead with opium, the other ingredients in each case being benighted card, white wax, and oil of thopobro.

SURGERY, OR CHIRURGY, *sur'-je-ry* [Gr. *cher*, the hand, and *ergon*, work], is that branch of the healing art which employs

Syrup.

manual procedure, whether by instruments or not, in the reparation of injury or cure of disease, as distinguished from the practice of medicine, which treats disease by the administration of drugs or other substances of a sanative tendency. This distinction, however, exists more in name than in reality, for the two are indissolubly connected, and the successful practice of the one is, of necessity, dependent on a knowledge of the principles of the other. In no branch of medical science is progress more marked than in that of surgery, the rude and imperfect instruments that were formerly in use having been superseded by others of the most perfect form and delicate structure; red-hot irons and boiling pitch are no longer applied to stanch a bleeding wound, while the knowledge of when an operation is necessary, and when it ought to be performed, not among the least important qualifications of the surgeon, was never before in so advanced a state. The discovery of chloroform has, moreover, been of the greatest benefit to the suffering patient. The skilful surgeon requires to be possessed of some of nature's choicest gifts. He requires to be possessed of a strong steady hand, a clear quick sight, and great coolness and courage. Dexterity in the use of the instruments is also of the utmost importance, and this is best acquired by diligent practice in the dissecting-room, which is further of use in giving him a minute acquaintance with the anatomy of the different parts. It is of great advantage to the surgeon to be ambidextrous, or to possess the power of using either hand equally well. Hence, in order to be an eminent surgeon requires a combination of gifts, natural and acquired, such as falls to the lot of few men. The different operations of surgery will be found noticed under their proper heads in other parts of this work. (See AMPUTATION, DISLOCATION, LITHOTOMY, &c.)

SYMPATHETIC SYSTEM. (See NERVES.)

SYMPHETUM, *sim'-fē-tum* [Gr. *sympheo*, I unite, because believed to agglutinate the lips of wounds], a gen. of the nat. ord. *Boraginaceae*. *S. officinalis* is the herb comfrey, which has always been reputed vulnerary. When bruised, or scraped to a pulp, comfrey forms an excellent bandage for broken limbs, on account of the starch and mucilaginous matters it contains.

SYNCOPE. (See FAINTING.)

SYNOVIA is an unctuous fluid serving to lubricate the cartilaginous surfaces of the bones which form joints, and to facilitate their motion. It is secreted from certain glands in the joints, which it serves to lubricate.

SYRUP (Lat. *syropis*) is a saturated solution of sugar in water, either simple or united with other substances. Syrups are chiefly employed to render unpalatable

Systole.

medicines more acceptable, and otherwise incisive little use. Simple syrup is made by dissolving 5 lb. of refined sugar in two pints of distilled water with the aid of heat, and then, after cooling, adding as much water as may be necessary to make the weight 7½ lb.

SYSTOLE (See HEART)

T.

TABACUM (See TOBACCO)

TABES [Lat.] a wasting of the body either bodily emaciation, weakness, and fever, but without cough or expectoration. It is commonly distinguished from atrophy by being attended with *fever*, which the latter is not. It is generally supposed to be either some acrimony or poison in the blood. The treatment consists in endeavouring to strengthen the system by tonics, nourishing diet, change of air, sea bathing, &c.

FENIA, the tape worm (See WORMS.)

TANNIN *t. ann.* a tannin formerly applied to the various forms of the instrument and article contained in the materials used for tanning leather. The best known of them is gallotannic acid, which is generally known by the name of tannin or tannic acid. It is obtained in the nut gall of the oak which contains two thirds of its weight of this acid. *Glycerine of Tannic Acid* (5 oz. of acid in 14 fluid drachms or of glycerine mixed) is a valuable ointment, applied to piles and related bleeding, or inflamed parts. *Tannin Laxative* contains each half a grain of the tannic acid and are given to the extent of 10 to 20 grains a day. As a suppository, tannin acid is useful in piles, bleeding, or relaxation of the lower bowel.

LAPWORM (See WORMS.)

LAJOLA (See MANITO)

TARAXACUM, *t. officinale* [Gr. *taraxos* I chium, from its supposed effects on the head; a gen. of the nat. ord. *Composita*] *Taraxacum officinale* (the *Leontodon taraxacum* of the mob. writers) is the common dandelion. The root of this plant is very extensively employed as a medicinal agent and is believed to possess aperient, diuretic, and alterative properties. For decoction take 1 ounce of dried root, 1 oz. and bruised and 1 pint of distilled water, boil for 10 minutes in a covered vessel, strain, and add water to make a pint. Dose, 2 to 4 fluid ounces. The extract in use from the fresh root crushed, is given in doses of 5 to 30 grains. Of the juice the dose is from 1 to 2 fluid drachms.

TARSUS (See FOOT.)

TARTAR, *tar tar*, a whitish crust deposited from wines upon the inside of casks in which they are stored. It consists essentially of the sparingly soluble bitartate of potash. When purified, it crystallizes in

Teeth

oblique rhombic prisms of snowy whiteness, forming ordinary cream of tartar. Crude tartar, or argol, forms the chief source of tartaric acid (which see).

TARTARIC ACID, *tar tar' ic*, an organic acid, obtained principally from the crude tartar formed on the inside of the casks in which wine is stored. It also occurs in the bark of the tamarind and mountain ash. It is much used in medicine, the dose being from 10 to 30 grains in water. Tartaric acid is a dibasic, and exhibits a strong tendency to form double salts, of which there are several varieties. The most important salts of this acid are the following—*Bitartate of potash*, or pure cream of tartar. It is sparingly soluble in cold water, requiring about 18 times its own weight for solution. It is used in medicine as a refrigerant and diuretic, in doses of ½ to 2 drachms, and as an aperient in doses of from 4 to 6 drachms. *Tartate of potash and soda*, or *Rochelle salt*, is much used in medicine as an aperient. The double tartrates of iron and potash, and of iron and ammonia are also used for the same purpose. *Tartate of potash and ammonia*, or tartar emetic, has long been extensively used in medicine. (See ANTIMONY.)

TAXUS, *taxus* [Lat.], in Bot., the yew, the typical gen. of the nat. ord. *Taxaceæ*. *T. baccata* the common yew, is an evergreen tree, which often attains a great size. Its leaves and young branches act as narcotic acid poisons when eaten by man or the lower animals.

TEA (See TEA.)

TEARS, *lachræ* [Lat. *lacrymae*], are the liquid fluid secreted by the lacrymal glands, and flowing on the surface of the eyes. They serve to prevent the friction of the eyelids on the eyes, to keep the cornea moist, and to wash away any extraneous bodies that may have fallen into the eye (See EYE.)

TEETH, teeth [Sax. *teah*, Lat. *dentes* Gr. *odous*] are certain hard bodies inserted in the jaws and serving to masticate the food. Every tooth consists of two hard parts, one external white, uniform, somewhat like ivory, the other internal, somewhat like the compact structure of bone. The former, which is called the enamel, is very close in texture, perfectly uniform and homogeneous, yet presenting a fibrous arrangement. It is seen only on the body of the tooth, the upper and outer part of which consists of this substance. The intercal portion of the tooth and the root consist of密密 grained bony matter, as done as the compact walls of the long bones. In the interior of the bony part of each tooth is a cavity, which descends into the root and communicates at its extremity with the outer surface by openings corresponding to the number of branches into which the tooth is divided. This cavity, which is large in young or newly formed teeth, and small in those

Temples.

which are old, contains a delicate vascular membrane, which has been named the pulp of the tooth. In the child, the teeth usually begin to cut through the gum about the sixth or seventh month after birth, and the temporary or deciduous set of teeth, twenty in number, are generally completed by the end of the third year. The period of dentition is usually a period of disordered health to children, especially if anything occurs to prevent the ready yielding of the gum to the pressure of the tooth below (See DYSMENIA). The deciduous teeth begin to fall out about the age of seven or eight, and are replaced by the adult or permanent set. These are 32 in number, or 16 in each jaw, namely, 4 incisors or front teeth, 2 canines or canine teeth, 4 bicuspids, and 6 molars. The last two molars are called *dentes sagittae*, or wisdom teeth, on account of their not making their appearance till about the age of eighteen or twenty, or later, when one is supposed to have reached the years of discretion. The teeth are subject to decay, and require to be kept clean by frequent brushing (See TOOTHACHE).

TEMPLES [Lat. *tempora*, literally, time] are the lateral and flat parts of the head above the ears, so called because time, or the age of an individual, is denoted by the hair becoming first grey here. The temporal bones are two irregular-shaped bones, one on each side of the head, connected with the occipital, parietal, and sphenoid bones. The temporal muscle is situated in the temple, and inserted into the coronoid process of the lower jaw, its principal use being to draw the lower jaw upwards, as in biting. The temporal artery is a branch of the external carotid, which runs on the temples and gives off the frontal artery.

TENDON [Lat. *tendo*, I stretch] is a name applied to those fibrous cords by which the ends of the muscles are attached to the bones. They are strong and elastic, of a white and glistening appearance.

TERATOLOGY. (See DYSMORPHY.)

TEREBINTHINA. (See TURPENTINE.)

TERA JAPONICA (See CATECHU.)

TELESTAS, tel'-a-thas [Gr. *telestas*, from *tele*, I stretch], is a disease characterized by a violent and rigid spasms of many or all of the muscles of voluntary motion. It frequently arises from some irritation of the nerves, in consequence of local injury by puncture, incision, or laceration, but it is also sometimes occasioned by exposure to cold and damp & *Chorea*. — In some instances it comes on suddenly and with great violence, but more frequently its attack is gradual, beginning with a slight stiffness in the back part of the neck, which, in a short time, is considerably increased, and, at length, renders the motion of the head difficult and painful. An uneasy sensation is felt at the root of the tongue, which increases and causes a difficulty of swallowing,

Theobroma

at length preventing it altogether. A great tightness is perceived about the chest, with a violent pain at the lower part of the sternum, shooting into the back. A stiffness also takes place in the jaws, which soon increases to such a height that the teeth become so closely set together as not to admit of the smallest opening. This is the most common form of the disease, and is known as locked jaw. Frequently however, the disease extends farther and the muscles of the spine become affected, so as to bend the body forcibly backwards or, on the other hand, the muscles of the abdomen are affected, and the body bent forwards, and sometimes the muscles both before and behind are affected. These spasms are attended with the most severe pain, but seldom with any fever. This disease is frequently fatal, and, unfortunately it too often resists every mode of treatment.

Treatment. The modes of treatment indicated by the disease are, 1, the removal of any local irritation which may happen to have excited it, 2, lessening the general irritability and spastic tendency, 3, softening the tonic of the system. Opium is the remedy which is most frequently resorted to in such cases and must be given in very large doses repeated at short intervals (liberally or ether inhalation will also be of service in relieving pain). Wine or brandy and tinctures as quinine, in large doses, are strongly recommended by some. Others recommend purgatives in large doses and continued for some time. It is to be borne in mind that the system in this state is not so susceptible as on ordinary occasions, and hence large doses are required. When the jaws have become locked, it is necessary to administer food or medicine in the form of clysters, or sometimes to remove some of the front teeth.

TERTER. (See HERPS.)

TEA or *TEA*, in Bot., is the typical genus of the nat. ord. *Theaceae*. The *T. sinensis* is the best known species, yielding the well known (Chinese) tea of commerce. The different kinds of tea are believed to come from varieties of the same species and not from distinct species. The properties of tea depend chiefly upon the presence of a principle called *theine*, which is identical with *caffeo* in coffee (See CAFFEEINE). Tea is well known for its refreshing and exhilarating effects. It acts as a sedative on the nervous system, and will often remove head-ache. When too much or too frequently indulged in, however, its effects are injurious on the nervous system, and it produces various forms of dyspepsia. In persons accustomed to it, it frequently occasions wakfulness. In general, tea is unsuitable for children, while of benefit to the old.

THEINE (See CAFFEEINE.)

THEOBROMA [*the-o-bro-ma*] [Gr. *theos*, a god; *broma*, food, from the delicious quality of

Therapeutics

its fruit], a gen. of the nat ord *Bijuraceæ*. *T. Cacao*, the cacao or cocoa tree, is a native of Mexico, and is now more or less extensively grown throughout Central America, Brazil, Peru, Venezuela, &c., and some of the West India Islands, forsooth amongst which stands Trinidad. The various kinds of cocoa and chocolate are prepared from the seeds. These contain a peculiar alkaloid called *theobromine*, which resembles *caffeine* in the principle common to coffee and tea. To this alkaloid, and the peculiar fat called *butter of cacao*, the properties prepared from the seed owe their exhilarating and nutritious properties. The butter of cacao or oil of the obroma, is an ingredient in the preparation of suppositories.

This practice they [open file] [Gr. *therapeia*] attend the sick [in this department of medical science which deals with the way of curing disease]. It is that of symptoms, & disease, and the conclusions to be drawn from them, of the power of nature, and how far it may be relied on, of the modes of operation of the various remedies &c. The changes that have of late years taken place will be seen in what follows. I well know it must in the following quotation—"To the most superficial observer it must be obvious that therapeutic has undergone great and important changes, that in the course of treatment now adopted for many diseases is just the opposite of that which was in vogue a generation ago and which lingers even in recent editions of standard books, although their authors have long since ceased to follow the directions which they still give to others. A few years ago, the treatment of inflammation of an important organ was laid down definitely, such and such things were to be done, and no questions were to be asked as to whether the cause was of this sort, or the other type—
inflammation with heat and blisters to be taken, low diet was to be enjoined, and lowering medicines were to be exhibited, and supposing the inflammation did not yield, the forces of attack were to be again placed in action." Somehow or other the inflammation was to be put down, and it not rarely happened that the process impelling against the human "inflammation" proved itself of highly injurious to the patient. Now, we find it written "If such conditions are found,—a high, full, strong, frequent pulse, with great heat of skin, no prostration impending evil from this condition being present is the phenomenon then comes—then bleeding, antiphlogistics, and the like must be employed." But, as matter of fact we do not find those cases, and the more common *or de* of medical practice is to the effect that, as the inflammation seemed extending, the quantity of wine has been doubled, the supply of beef increased, and pink and ammonia given more frequently. Much is done

Thorax.

by medical treatment now, more real good than ever was done before, but it is done in a different way, and with another aim. Disease is detected in its earlier stages, and often arrested there; and when developed, the patient is guided through it, if he can be, and is not sacrificed to some wild attempt at its destruction."—("System of Medicine," edited by J. R. Reynolds, M.D., 1866.)

THIGH, *thigh* [Sax. *thig*, Lat. *femur*], is that part of the inferior extremity between the lower part of the trunk and the leg. It is articulated to the pelvis, and to the bones of the leg at the knee. The thigh-bone is the longest of all the bones of the body, and consists of a body or shaft and two extremities. The body is compressed, but nearly cylindrical towards the centre, and expands superiorly and inferiorly. At its superior extremity is the neck, which is directed upwards and inwards, so as to form an obtuse angle with the shaft, and at its point of union with the latter are two eminences, called the trochanters. The neck is so called from its constricted appearance, as well as from its supporting the head. This last is globular, forming a considerable segment of a sphere, and in the fresh state is coated with cartilage. It articulates with the *acetabulum*, or cup shaped cavity of the os innominatum, so as to admit of a variety of motions. The inferior extremity of the bone is much thicker and broader than the superior, and is terminated by two eminences separated posteriorly by a deep fossa, and named the external and internal condyles. The articular surfaces of both condyles are covered with cartilage, and are connected inferiorly with the tibia, and anteriorly with the patella. This bone is well covered with muscles, and through the thigh pass large blood-vessels and nerves connected with the foot and leg. (See ANATOMY.)

THIRST, *thirst* [Sax. *thurst*], in the animal economy is that peculiar sensation which attends the desire to drink. During the operation of the animal functions a great quantity of moisture is consumed, the loss of which must be supplied; and thirst is the voice of nature calling upon the animal to supply the place of the lost moisture by drinking. Water is the proper object of this desire, and the quantity necessary for this purpose varies greatly according to the different circumstances of age, sex, and temperament, and still more according to the nature of the food taken, the state of the atmosphere, the mode of life and the custom of the individual. An outward application of moisture is found to diminish thirst; and sailors have been able to sustain life by bathing in the sea. Thirst is a sensation much more difficult to bear than hunger, leading from restlessness to anxiety, despair, and madness.

THROAT, *throat* [Gr. *from throe, I leap*, because the heart leaps in it], is the cavity

Thorn-apple.

or that part of the body which is situated between the neck and the abdomen. It is composed of bones, cartilages, and ligaments, which form a large conical cavity for the lodgment of the heart, lungs, and large blood-vessels. Its walls are formed posteriorly by the dorso-thoracic vertebrae and the ribs as far outwards as their angles, laterally by the bodies of the ribs, and anteriorly by the anterior extremities of the ribs, the sternum, and the costal cartilages. It is separated from the abdomen below by the diaphragm. The thoracic duct lies upon the dorsal vertebrae between the aorta and the vena azygos, and extends from the opening of the diaphragm to the angle formed by the union of the left subclavian and jugular veins, into which it opens and pours its contents. It is the great trunk of the absorbents, which pour their contents into it from almost every part of the body (See Heart, Lungs, &c.)

THORN-APPLE. (See Datura)

THREWB-WORM. (See FILARIA, Worms)

THROAT, SORE. (See CYANOCHE)

THRUSH. (See APHTHA)

TIBIA. (See Leg.)

The Douloufoux, *la dol-o-roo'* [F., painful spasm], is a very painful affection of a facial nerve, most commonly that branch of the fifth pair which comes out of the infra-orbital foramen. It comes on in sudden and excruciating attacks, attended with convulsive twitches of the muscles, and continues from a few minutes to several hours. It seems sometimes to be connected with a disordered state of the digestive organs, or it may proceed from some morbid condition of the teeth or bones of the face, from some disease of the brain or nerves, or may arise from general debility. In order to treatment, the first thing is to endeavour to discover the cause, and probably this will frequently be found to lie in the teeth, afterwards the general treatment recommended in other cases of neuralgia should be adopted. (See NEURALGIA.)

TIN, *taen* [Lat. *stannum*], sym. Sn., is a white, malleable, easily fusible metal, not much affected by exposure to dry or moist air at ordinary temperatures, but becoming oxidized superficially when heated, burning with a brilliant flame if the temperature be raised sufficiently high. It dissolves in hydrochloric acid, with the evolution of hydrogen, forming hydrated chloride of tin. The chemical combinations are often numerous and important, and its resistance to oxidation and to the action of vegetable and animal acids makes it extremely useful for domestic purposes. It is seldom used in medicine, although the filings have been sometimes recommended as a verminicide.

TINCTURES [Lat. *tinctura*] are spirituous solutions of such of the principles of animal or vegetable substances as are soluble in acetated or in proof-spirit. Rectified spirit

Tongue.

is the proper menstruum of the resins, essential oils, saccharine matter, &c., of vegetables, and generally of those parts of animal bodies in which their peculiar smell and taste reside. Proof-spirit likewise takes upon these partially, and is, besides, the proper menstruum for gummy principles. Tinctures are chiefly used in cases where stimulants are indicated, on account of the spirit which they contain. Tinctures are usually prepared by macerating the materials for forty-eight hours (some substances require seven days) in three fourths of the menstruum ordered, in a close vessel, with occasional agitation, then decant the liquid, pack carefully the solid ingredients in a percolator, pour over them the decanted liquid, add the remainder of the spirit, remove and press the ingredients, and add, if necessary, sufficient spirit to make up the quantity.

TISSUE, *te'-shoo* [Lat. *tissue*], in Anat., texture, or organization of parts. The peculiar intimate structure of a part is called its *tissue*.

TOBACCO, *to bok' ko* [Lat. *tabacum*], is the common name of the plants comprised in the monopetalous genus *Nicotiana*. It is generally believed that tobacco was introduced into England by Sir Walter Raleigh and his companions after their return, in 1586, from their unsuccessful attempt to colonize Virginia. Very shortly after its appearance in the New World, the herb was prohibited both in England and many other parts of Europe. The physicians declared it hurtful to health the priests denounced its use as sinful. The strenuous way in which it was opposed by James I. of England is a matter of history. But kindly and priestly wrath were futile against the far and wide extension of the use of the herb, and at the present day it has become perhaps the most generally diffused luxury in existence, for, according to an estimate made by Mr. Crawford, the average consumption of tobacco by the whole human race, of 1,000 millions, is 70 ounces a head per annum. Tobacco is a powerful sedative and narcotic, but in excess it produces sickness, vomiting, diarrhoea, cold sweats, headache, extreme debility, and even convulsions. It particularly affects the heart, causing frequently great depression. It is useful in relieving violent spasmodic constriction; and hence it is sometimes recommended to be smoked in cases of asthma. It sometimes also relieves obstinate constipation or suppression of urine. It is occasionally used as snuff for affections of the head. An enema is made by infusing 20 grains of the leaf in 8 fluid ounces of boiling water for half an hour in a covered vessel, and then straining.

TOE. (See Foot)

TOLU. (See MYROSTERMUM)

TOMATO. (See LYCOPERSICON)

TONGUE, *tung* [Sax. *tung*], an organ found

Tonics.

in most animals. The human tongue is a soft fleshy viscous, situated interiorly in the cavity of the mouth, very movable in every direction, and constituting the organ of taste. Its movements are chiefly subservient to speech and the prehension and swallowing of food; and besides taste, it is also highly endowed with the sensation of touch. The sensitive power of the tongue resides in the membrane which covers it, the motor power in the interior. Indeed almost the entire substance of the tongue is composed of muscular fibres running in different but determinate directions, many of which belong to muscles which enter at its base and under-surface, and attach it to other parts. Hence the great variety and regularity of its movements, and its numerous changes of form. It is abundantly supplied with arteries, veins, and nerves, the last being.—(1) the lingual or gustatory branch of the fifth pair; (2) the sublingual branch of the glossopharyngeal; and (3) the hypoglossal nerve. The upper surface of the tongue is covered all over with numerous projections or eminences named papillæ. Towards the tip and free borders they gradually become smaller, and disappear on the under surface. These are doubtless chiefly concerned in the special sense of taste, but they also possess in a very high degree that of touch.

Tonics [Gr. *tonoo*, I strengthen] are medicines employed to improve the tone or strength of the system by acting on the muscular fibres through the nerves. Tonics are stimulants of a certain kind, but differ from ordinary stimulants in the permanence of their effects. They are usually prescribed in small doses frequently repeated, and are persevered in for some time. It is generally necessary to begin with a mild tonic, before taking one more powerful. If carried to excess or too long continued, tonics act as irritants, weaken the system, and induce disease. Among the tonics in more common use may be mentioned cinchona, quassia, gentian, chirecta, cusparia, calumba, cascara, strychnine; the various preparations of iron, bismuth, copper, zinc, arsenic; hydrochloric, nitric, and phosphoric acids.

TONSILS *ton'-sils* [Lat. *tonsilla*], are two complex glands, situated one on each side of the fauces, between the anterior and posterior arches of the soft palate. They correspond to the angle of the lower jaw, where they may be felt beneath the skin when enlarged. They are of an elongated oval form, usually about six lines in length, and four in width and thickness; but they vary much in size in different individuals. Each is composed of a number of smaller glands, and presents a number of orifices opening on the surface of the mucous membrane. The nature of the secreted fluid is not certainly known, but it bears a general re-

Trachea.

semblance to saliva, and doubtless serves a similar purpose.

TONSILLITIS. (See QUINSY.)

TOOTHACHE, *tooth'-a-ke* [Lat. *odontalgia*], is a well-known and very painful disease, situated in the teeth, most frequently in the molars, and more rarely in the incisors. The pain sometimes reaches up to the eyes, and sometimes backwards into the cavity of the ear. It may arise from various causes, but most frequently it is owing to some decayed tooth. Often, however, it is a mere rheumatic affection arising from cold. It attacks persons in all periods of life, but is most frequent in the young and plethoric. When the pain takes place in a decayed tooth, it is owing to the admission of cold air irritating the exposed nervous fibrils in the hollow or carious part. Hence a frequent cure of toothache is by destroying the nerve by touching it with a hot iron or oil of vitrol. The application of opium, chloroform, oxon of clover to the part often affords relief. When there is much inflammation, bleeding the gums, blisters behind the ears, and purgatives may be necessary. When the disorder proceeds from rheumatism, which will be known by the pain being more diffused, and affecting the muscles about the jaw, fomentations, blisters behind the ear, and the other remedies for rheumatism, are to be employed. Frequently, however, every means fails, and the only remedy left is to draw the tooth. Stuffing the tooth with gold, gutta-percha, or such compositions as dentists use, is very serviceable in protecting the nerve from injury, and preventing further decay; but should never be had recourse to when there is any pain or inflammation present, as its tendency, by pressing upon the nerve, is to aggravate it.

TOURNIQUET, *toor'-ne-ket* [Fr.], an instrument made use of in the practice of surgery to stop bleeding; but it can only be applied to the limbs, and its use is only intended to be temporary. It consists of a strong band, about an inch and a half wide, upon which there is a movable leather pad, capable of being adjusted immediately over the artery on which it is desired to apply the chief pressure. The rest of the band is passed round the limb, and is secured by a buckle. The whole is tightened or loosened by means of a brass bridge.

TRACHEA, *træk'-e-a* [Gr. *tracheia*, from *trachea*, rough], is the cartilaginous and membranous canal through which the air passes into the lungs, commonly known as the windpipe. Its upper part is called the larynx, the uppermost and smallest part of which is called the epiglottis, being placed over the glottis, or mouth of the larynx, and serving to close the passage to the lungs in the act of swallowing. (See LARYNX.) From the lower end of the larynx the canal takes

Tracheotomy.

the name of trachea, and extends as far down as the fourth or fifth vertebra of the neck, where it divides into two branches, which are the right and left bronchial tubes. Like the larynx, it is formed of cartilages, united to each other by means of very elastic ligamentous fibres. It is also furnished with fleshy or muscular fibres, some of which pass through its whole extent longitudinally, while others are carried round it in a circular direction, and hence it may shorten or lengthen itself, or contract or dilate its passage.

TRACHEOTOMY, *træk'ē-ō-mē* [Gr. *trachea*, and *tēmeō*, I cut], is the operation of cutting into the trachea for the purpose of admitting air into the lungs when the upper part of the air-passages is obstructed, or for the extraction of foreign bodies from the trachea. It is necessary in many diseases, and, though not without danger, it is often the means of affording instant relief. After the opening is effected, a small silver tube is introduced, through which the operation of breathing is carried on.

TRAGACANTH (*See ASTRAGALUS*)

TRANCE (*See CATALYSIS*)

TRANSFUSION [*Lat. transfuso*, I pour from one vessel into another] in Surg., is an operation sometimes had recourse to in cases of excessive loss of blood or extreme weakness, of injecting into the veins blood from a healthy individual. This is done by means of a syringe, so filled with blood as not to admit of even a bubble of air, inserted into one of the patient's veins at the bend of the arm, and injected very slowly and cautiously.

TREPANNING *tre-pā'nīng* [Gr. *trupao*, I perforate], in Surg., is the operation of perforating the skull by means of a circular saw, when the head is so injured that it is necessary to remove a part of the bone. The instrument is called a trepan or trephine. The operation is not dangerous but care requires to be taken not to injure the soft parts underneath. When the bone is nearly sawn through, the piece is then raised with the elevator, the projecting angles of the bone being afterwards removed with a saw, and all other irregularities of the cut surface destroyed. The cut edges of the bone afterwards throw out granulations, which become ossified, but there is always a small interval which does not ossify, in or about the centre.

TRICHOSE (*See LOZENGE*)

TRICUSPIS (*See HERNIA*) They are of different kinds, but in general they consist of a pad which presses on the seat of the injury and a band of steel spring passing round the body and keeping it in its proper place.

TUBERCULUS [*Lat. tuberculum*, a little tuber] is a peculiar morbid product occurring in various textures of the body in scrofulous

Typhoid Fever.

subjects, particularly in the lungs (See PHTHISIS).

TUMOR, *tū-mor* [Lat. *tumor*, from *tumeo* I swell], in its widest acceptation denotes a swelling of any kind on any part of the body, but it is commonly restricted to a swelling of a permanent nature while such an area from inflammation and suppuration along with the cause are usually known as *tumefactions*. Tumours are commonly distinguished into *sacromatos*, or such as are firm and of a fleshy consistency and *soft* consisting of a sac containing matter watery or less pulpy or fluid. Of each of these several distinguish several kinds.

TUMERIC (*See CURCUMA*)

TURPENTINE (*See BRASSICA*)

TURPENTINE, *terpēnīn* [Lat. *terpēnīna*], a semi-solid resinous substance, which exudes from various species of pine on cutting incisions in the bark. There are several kinds of turpentine known in commerce, that obtained from the *Pinus Alba* constitutes common turpentine. It is used in medicine as a rubefacient and is employed as a balsom in chronic inflammations. Internally, it is stimulant diuretic, and diaphoretic and in large doses cathartic. It acts particularly upon the kidneys, sometimes producing dangerous symptoms. It is sometimes used as an antispasmodic in hysterical disorders and also as a vermifuge. Dose, 1 to 3 minims, from 4 drachms as initial minuscule. Dose of confection, 1 to 4 drachms.

TUSCHILAGO, *tus-chil-a-go* [Lat. *tusca*, a couch], a gen. of the nat. ord. *Composita*. *T. Jasminiflora* is the colts foot, an herb which has long been employed as a popular remedy in chronic coughs and other pulmonary complaints.

TUSSIANUM (*See LAX.*)

TYPHOID FEVER, *ty-foyd*, resembles in its main features that of typhus, and until very recently the two were generally regarded as but two stages of the same affection. There appears good reason, however, for believing them to be essentially distinct disorders. Typhoid fever usually commences more insidiously and more gradually than typhus, the sufferer is less dull and stupid, but more anxious, and during the delirium decidedly more active and even vivacious. Diarrhaea is almost always present in typhoid fever (often accompanied with haemorrhage) very rarely in typhus. In the former the eruption consists of rose-coloured spots, thinly scattered, and often entirely absent. Typhoid fever is most common in youth, and rarely attacks persons after forty, while typhus may occur at any age, and the former does not reach its height for a week later than the latter. In general the treatment required in both cases is alike, except in one or two particulars.

At the commencement of typhoid, emetics are of service, but specimens should rarely be given, in consequence of the tendency to

Typhus.

diarrhoea. The intestinal irritation and diarrhoea require for their treatment astringents, combined with opium, which may be administered either by the mouth or rectum. If there be haemorrhage from the bowels, cold ought to be applied carefully over the abdomen. During convalescence, the patient requires to be carefully attended to, as relapses are apt to occur; and the return to a generous diet must be very gradual.

Typhus., *ti'-fus* [Gr. *typhos*, I smoulder, or burn and smoke without vent], is a kind of continued fever, characterized by the ordinary symptoms of fever, with debility in the nervous and vascular systems, and a tendency in the fluids to putrefaction. *Cause.*—Any of the ordinary causes of fever may give rise to typhus, but by far the most common cause of typhus is contagion, or febrile malady, the activity of which is much increased by the crowding in close and ill-ventilated places, filth, insufficient nutriment, and other causes tending to depress the vital power. It is eminently contagious and infectious, and often prevails epidemically. *Symptoms.*—It does not always commence in the same way, and sometimes it may be several days before the disease assumes its proper aspect, during which the patient may continue his ordinary occupations, but complaining of chills, nausea, thirst, loss of appetite, languor, and headache. Frequently, however, the precursive stage is short, or altogether wanting, and it commences with symptoms which are common to many acute diseases. Sometimes it sets in with a shivering fit or a severe headache, accompanied with great prostration and muscular pains in various parts. There are also dryness and heat of skin, thirst, constipation, and rapid pulse, with great irritability and restlessness towards the evening. Sometimes, even during the first stage of the disorder, the prostration of strength is so great that the patient lies on his back motionless, and insensible to all that is going on around him. Towards the end of the first week the eruption peculiar to typhus begins to show itself. It consists of irregular spots of a dusky or mulberry hue, disappearing on pressure, and feeling as if slightly raised above the skin. They may be few and single, or numerous and large, owing to the coalescence of several of them; their number and depth of colour being usually in proportion to the severity of the attack. In a day or two they become of a brick-dust colour, and remain till the end of the fever. They are rarely absent in adults, but in children, particularly in mild cases, they are not unfrequently absent. During the second week the pulse becomes more frequent, weaker, and more compressible, the tongue darker and browner, and the voluntary movements very much weakened. The voice becomes feeble, and the patient can scarcely utter an audible sound;

Ulcer.

perhaps he may be unable to swallow, which is always regarded as a very bad symptom. During this stage there is great deficiency of sensation and insensibility to impressions. It is in the course of the second week that the disease is most apt to terminate fatally. As it approaches this termination, a peculiar factor is exhaled by the patient's body; his tongue becomes dry, black, and fissured; his teeth are covered with dark sordes; sloughs form on different parts, and in extreme cases the toes have mortified. During the third week the patient's chance of recovery improves; in which case the more formidable symptoms begin gradually to diminish and abate. He begins once more to take an interest in what is going on around him, the temperature of his skin becomes more natural; the tongue moist and cleaner, and the frequency of the pulse much less. Typhus fever sometimes becomes complicated with inflammation of the brain, congestion of the lungs, or disease of the heart. *Treatment.*—In the early stages of this disease it is best not to interfere much with nature's operations; the principal aim ought to be to keep the patient alive until the fever-poison has expended itself. When seen early, however, it is often of advantage to administer an emetic or a purgative; and the patient's uneasy sensations will be much soothed by spongeing the surface of the body with cold or tepid water. Directly the powers of life begin to fail, a stimulating course of treatment should be commenced; as strong beef or chicken tea, with wine or brandy frequently administered, taking care that it does not aggravate the febrile symptoms. When there is much general irritability and sleeplessness, a dose of opium may be given. The patient should be in a large, well-aired apartment, and the windows kept open as much as possible. As the patient begins to recover, a course of tonics will be necessary to expedite his restoration to health.

U.

ULCER., *ul'-ser* [Lat. *ulcus*], is an open sore occurring in some of the soft parts of the body, either opening to the surface or to some internal cavity, and attended with a secretion of pus or some kind of discharge. Ulcers may arise from a variety of causes, as from wounds, specific irritation of the absorbers, from *cynco*, *scurvy*, *scrofulous* virus, &c. Wounds in the flesh, if at all deep, are very likely to pass into ulcers, and persons in whom, from any cause, the circulation has become sluggish, are more liable to ulceration, and those of an unhealthy kind, than others. In simple ulcer, almost all that requires to be done is to keep the surface clean by putting on a little dry lint if there be much discharge, and if not,

Ulmus.

dressing, of simple ointment. Where the part or the constitution is too weak to carry on the healthy action, general as well as local treatment is required; and the system has to be strengthened by nutritious diet, tonics, &c. In indolent ulcers, the applications require to be principally of a stimulative nature, as basilicon ointment, and occasional sprinkling with red oxide of mercury.

ULMUS, *ul'-mus* [Lat.], the Elm, the typical gen. of the nat. ord. *Ulmaceæ*. The species *U. campestris* is the common English elm; *U. montana*, the Scotch or Wyld elm; and *U. fulva*, the slippery elm of the United States. The dried inner bark of the *U. campestris* is officinal, being tonic, demulcent, and astringent, and said to be a good substitute for sarsaparilla. The decoction is made by boiling for ten minutes in a covered vessel $\frac{1}{2}$ ounces of the bark cut in small pieces, in 1 pint of distilled water, then straining and making up the product to 1 pint. Dose, 2 to 4 ounces.

ULNA. (*See ARM.*)

UMBILICAL CORD. (*See NAVEL.*)

UNGUEUM. (*See OINTMENT.*)

UREA, *yu'-re-a*, forms an essential constituent of the urine of all animals, and is most abundant in that of the mammalia, particularly so in the case of the carnivora. It is the principal outlet of nitrogen from the system after the materials which compose the animal tissues have experienced oxidation under the influence of inspired air.

URETHRA. (*See BLADDER.*)

URGINEA is a genus of plants of the nat. ord. *Liliaceæ*. The best known species is *U. Sella*, the squill, a native of the countries in the neighbourhood of the Mediterranean. The bulb, which is officinal, is pear-shaped, weighing from $\frac{1}{2}$ to 10 lb. In small doses it is expectorant and diuretic, and used in chronic catarrh, and sometimes in dropsy. In large doses it is emetic and cathartic. Dose of powder, 1 to 3 grains; as an emetic, 10 to 15 grains. The principal preparations are—the vinegar ($\frac{1}{2}$ ounces of the dried root bruised, 1 pint of diluted acetic acid, and $\frac{1}{2}$ ounce of proof spirit), dose 15 to 40 minims; oryzel (1 pint vinegar of squill to 2 pounds of clarified honey), dose $\frac{1}{2}$ to 1 drachm; tincture ($\frac{1}{2}$ ounces of the root bruised to 1 pint of proof spirit), dose 10 to 30 minims.

URIC ACID, *yu'-rik*, occurs in small quantities in human urine, to the extent of rather less than one per cent. of the solid matter contained in it. It is met with in much greater abundance in the excrement of birds and reptiles. When excess of uric acid is secreted in the system, it deposits hard crystalline grains in the bladder, which, if retained, gradually form concretionary calculi, and grow into the disease known as gravel or stone. (*See CALCULUS.*) In gouty

Vaccination.

pations, uric acid accumulates round the joints, forming white friable concretions known improperly as chalk-stones.

URINE, *yu'-rin* [Lat. *urina*], is a highly complex fluid, secreted from the blood by the kidneys. In a healthy person, when recently voided, it is a clear limpid fluid, of a pale yellow or amber colour, with a peculiar faint aromatic odour, which becomes purgent and ammoniacal when decomposition takes place. Often, however, as it cools, it becomes opaque and turbid, from the deposition of part of its constituents previously held in solution; and this may be consistent with health. The quantity secreted in twenty-four hours depends upon the amount of fluid drunk and the quantity secreted by the skin; but generally it is about from thirty to forty fluid ounces. In 1,000 parts of ordinary urine there are 9; parts of water and 67 parts of solid matter.

URTICARIA. (*See NETTLE RASH.*)

UVA URSI. (*See ARCTOSTAPHYLOS.*)

UVULA, *yu'-vu-lu* [Lat. *uva*, a grape], is a small fleshy protuberance which hangs at the middle of the posterior margin of the soft palate. In the case of sore throat, it frequently becomes enlarged and inflamed, and is to be treated by the application of stimulants and astringents in gaigles. When other means fail, it may require to be amputated, an operation which is neither painful nor dangerous.

V.

VACCINATION, *vak-sin-a'-shun* [Lat. *vaca*, a cow], is the artificial production of a disease known as the cow-pox, by inserting some of the matter of the disease under the skin. The cow-pox was so called from being communicated to the human subject from certain specific sores on the tonsils and udders of cows. Milkers were particularly liable to this disease, and among the great dairy farms in Gloucestershire there was a popular belief that no person who had had the cow-pox could afterwards take the small-pox. This having excited the attention of Dr. Jenner, he satisfied himself of the truth of it by inoculating with small-pox matter several individuals who had had the cow-pox; and at length conceived the happy idea of propagating the cow-pox from one individual to another, and so preventing in all cases the dangerous dispenser of small-pox. The great advantage of vaccination over inoculation is that it only produces a slight disorder, which is attended with no risk, and not communicable except by direct engrafting. The operation is usually performed by making an oblique puncture through the epidermis and introducing a portion of the virus on the point of the lancet or needle. If the operation has been

Vaccinium.

successful, a small inflamed spot is discernible about the third or fourth day. This increases in size, becomes hard and elevated, and about the sixth day a small quantity of fluid may be distinguished in the centre. About the eighth day, when the pustule is fully formed, the constitutional effects begin to appear—heat,ache, shivering, loss of appetite &c, which gradually subside in one or two days. Afterward the fluid dries up, and a dark brown scab forms, which remains for about a fortnight and on disappearing leaves a depression. It is a disputed point whether the effects of vaccination are permanent or whether they disappear after a certain time. The majority seem to be in favour of the latter opinion, as it is to the extent of recommending that persons who have been vaccinated in infancy should be revaccinated on attaining maturity. From the operation being imperfectly performed or from other causes not well understood vaccination does not in all cases afford absolute immunity from the disease, but in those cases in which it does occur it is almost always in a very mitigated form.

VACCINIUM [*vk-sin'-yüm*] the typical gen. of the nat. ord. *Vaccinaceæ*. The fruits of several species are edible; thus *V. myrtillæ* yields the bilberry or blackberry, *V. uliginosum* the osier, or black whortleberry, and *V. vitis-idaea*, the red whortleberry or low berry.

VACCINIUM, *väk-sin'-yüm*, a gen. of the nat. ord. *Vaccinaceæ*. The root of *V. officinale* is the *official galangal* of the British Pharmacopœia, and is much employed as a nervous excitant and antispasmodic in hysteria, chorea, epilepsy, &c. Dose of powder, from 10 to 30 grains. The infusion is made by infusing 120 grains of the root bruised in roundels by boiling distilled water for one hour in a covered vessel and straining. Dose, 1 to 2 fluid ounces. Of the tincture ($\frac{1}{2}$ ounces of root in coarse powder to 1 pint proof spirit), the dose is 1 to 2 fluid drachms.

VAPOR, *vä-pör*, an invisible elastic fluid, rendered aeriform by heat, and capable of being condensed or brought back to the liquid or solid state by cold. Certain medicinal agents are administered in the form of vapour being inhaled by means of a suitable apparatus. (See INHALATION.)

VARICOUS BATH (See Bath.)

VARICOUS VENÆ [Lat. *varix*] is an enlarged and tortuous state of the veins, frequently occurring in the leg and other parts. The treatment consists in cold applications, and foment with pressure by means of bandages or ligatures.

VARIOSE (See SMALL POX.)

VEINS, *vä恩z* [Fr. *veine*, Lat. *vena*, a vein], are those organs of circulation by which the blood is taken up from the extremities of the arteries and conveyed to the heart (See CIRCULATION OF THE BLOOD).

Water.

VENIPUNCTURE [Lat.] is the opening of a vein for the purpose of abstracting blood. This operation is usually performed on the veins at the bend of the arm, sometimes on the external jugular.

VERATRUM, *ver-a-trüm*, a gen. of the nat. ord. *Melanthiaceæ*. *V. album* is the white hellebore, a medicinal plant, the rhizomes of which contain the alkaloids *veratrine* and *veronine*. White hellebore is a narcotic and poison, it has been employed externally in neuralgia, chronic swellings, or stiffening of the joints, but is rarely used internally. The rhizome of *V. viride*, American, green, swamp hellebore, is now employed as an arterial sedative in inflammatory affections. It is given in the form of tincture (4 oz. of the root to 1 pint of rectified spirit) in doses of 5 to 20 minims.

VERMIFUGE (See Worms, ANTHELMINTIC.)

VERTEBRA (See SPINE.)

VERTIGO (See GIDDINESS.)

VINI (See VINES.)

VINEGAR (See ACETIC ACID.)

VINE, *vīn*, the Vine, a gen. of the nat. ord. *Vitaceæ*. *V. vinifera* is the plant commonly known as the grape vine. The varieties which have been developed by cultivation are very numerous, more than 100 being distinguished. The leaf of the vine is a trigent, and has been used in diarrhoea.

VITRIOL (See SULPHURIC ACID.)

VOITAK ELECTRICITY (See GALVANISM.)

W.

WAERTS, *wärts* [Sax. *wart*, a wart], are hard, unsightly excrescences or tumours that form on the cuticle or outer skin, usually of the hands or some other convenient place. They are of slow growth, small, invariable, and generally conical in form. The best application for their removal is some caustic or escharotic, as nitrate of silver, caustic potash, or strong acetic acid.

WATER, *wän'-ter* [Sax. *water*] —Chemically speaking water consists of hydrogen and oxygen, united in equal equivalents by weight of eight parts of oxygen to one of hydrogen, or by measure one part of oxygen to two of hydrogen. The most valuable contrived experiments into the composition of water always give the same result— $58 \frac{1}{2}$ per cent of oxygen, and $41 \frac{1}{2}$ per cent of hydrogen. Water has the property of dissolving an immense number of substances, solid, liquid, and gaseous. The alcohol, most of the acids, and some other liquids dissolve in water in indefinite proportions, others again, such as ether, carbonic acid &c., in minute and determinate quantities, while others, like oil, seem per-

Water Brash

fectly in soluble. Pure water is alone obtained by distillation (See *Aqua*)

WATER BEACH [Lat. *pyrosis*] is one of the many forms in which dyspepsia, or a disordered state of the stomach, manifests itself. It is characterized by a burning sensation in the region of the stomach, followed by the eructation of a thin, watery, acid, or tasteless fluid. It is more frequent among women than men, and in the lower than the upper ranks of society. Some recommend opium, but we believe that the substitute of bismuth will be found of more service in this disease, combined with attention to diet and the avoidance of in nutritious or unwholesome food.

WATER IN THE HEAD (See *HYDROCEPHALUS*)

WATERS, MINERAL (See *MINERAL WATER*)

WAX (See *CERA*)

WEIGHTS AND MEASURES (See *ARITHMETIC*, *CARLIS' WEIGHTS AND MEASURES*)

WAX KNOB [See *worm*] An encysted tumour, varying exceedingly in size and character, and commonly situated immediately under the skin, but occurring also in some of the internal viscera. It is composed in a membrane called a cyst, and its contents sometimes resemble fat or soft; at other times it contains serum or a thin liquid brown or black fluid. Frequently the cyst opens easily when small, may be punctured and its contents pressed out, but sometimes this gives rise to very severe inflammatory action. The other and safer mode of treatment is to dissect it out with the knife, wherever its position will admit of it.

WHIRL SWELLING, in *Surg.* is a disease of the joints, so called from being unattended by any discoloration of the skin. It occurs most frequently in scrofulous constitutions. The knee joint is that most subject to its attack. It is the result of chronic inflammation in the bones, cartilages or membranes constituting the joint, and is always attended with swelling, the part being sometimes hard, at other times soft and yielding. In some cases there is little or no pain, and the motions of the joint are but little impeded; in others the pain is considerable, and motion entirely destroyed. After a time the joint becomes of very great size, while the skin appears of a pale shining colour with a number of large veins running over it. At length collections of matter form round the joint and gradually make their way outwards by various openings. The constitution is never greatly disturbed, the health fails, the appetite and sleep are bad, the pulse small and frequent with obstinate diarrhoea and profuse night sweats, till, unless speedy relief is obtained, the patient is carried off. In the treatment of this disease concrements and leeches should be applied to the joint and splints placed behind it so as to prevent all motion. Particular attention should be paid to the state

Worms

of the stomach and bowels, the patient being allowed generous diet and plenty of good air. These measures, however, are chiefly useful in the inflammatory stage of the disease when it has reached an advanced stage there is nothing left for it but amputation.

WERTHLOW, *et al.* [Lat. *paronychia*] is a very painful inflammation of one of the fingers or sometimes, though very rarely, of the toes, and usually proceeding to suppuration. In the more superficial cases the application of leeches and warm fomentations to the part will in general give relief, and sometimes cause the resolution of the inflammation. Where any matter is formed, as is generally the case, it requires to be discharged with the lancet when the discharge usually subsides. When deep seated, the symptoms are much more violent and the pain most excruciating and of a throbbing character extending up the arm even to the shoulders. Usually there is a considerable degree of fever and the patient suffers from want of rest. With all this pain there is but little redness or swelling, and, even when matter is formed it may not be perceptible in being deeply seated. Leeches, warm fomentations and poultices should be used in the early stages together with purgatives followed by tinctures but should this prove ineffectual, a free incision should be made down to the bone which usually affords such a small quantity of pus being discharged and the disease subsiding in a few days by the use of warm fomentations and poultices.

WILLOW (See *SALIX*)

Worms *vermes* [Sax. *verm*, a worm. Lat. *vermis*] parasitical animals which infest the intestinal canal of man. They are of five different kinds — the *Anelis*, or small thread worms, varying from an eighth of an inch to one and a half inch in length, in having usually the rectum in the rectum of *Limnia* (or long round worms) from two or three to ten or more inches in length and usually occupying the small intestine, and sometimes the stomach; the *Trichuris*, or long hair tail like worm occupying the cæcum and the *Ente* or tape worm of which there are two kinds occurring, the whole tract of the intestines and sometimes thirty or forty feet in length. Worms appear most frequently in the case of a relaxed habit, with weak digestive organs. From the highly organized and sensitive parts which they occupy worms give rise to great constitutional derangement, and produce a variety of symptoms, more particularly affecting the stomach and head. Among these are variable appetite, bad breath, picking of the nose, hardness and fulness of the belly, sensation of heat and itching in the anus, preternaturally red tongue or alternately clean and covered with a white slimy excreta, grinding of the teeth during sleep, short, dry cough, fro-

Wormwood

quent slimy stools, emaciation, slow fever, with an evening exacerbation irregular pulse, and sometimes convulsions or fainting fits.
Treatment—The treatment must be of a tonic and strengthening character, together with an avoidance of vegetables and smothering food. For the removal of the smaller kinds of worms, purgatives of the submucous of maturity, sennuy, aloes, rhubarb &c., are recommended. For the removal of the tape worm turpentine has been found to be very useful. It is best given alone, in a dose of half an ounce, on an empty stomach, followed, after an interval of two hours by an ounce of castor oil, or a full dose of any brisk aperient. Recently the male shield fern has come into use as a cure for tape worm and is highly recommended
 (See ASIDUM, ANTHIMINTIC.)

Wormwood*See ANTI MINTIC.*

Wound, no nd [See *wound*. Lat *ruthus*] is defined as "a solution of the continuity of a soft part of the body effected by some external agent and attended with a greater or less amount of bleeding." Wounds are of various kinds, and are generally distinguished as incised, lacerated, contused and punctured. An *incised* wound is a simple division of the fibres made by a sharp cutting instrument. A *lacerated* wound is one in which the fibres, in place of being cleanly divided by a sharp instrument are torn asunder by violence the edges of the wound being thus jagged and uneven. A *contused* wound is one made by a violent blow from some blunt instrument, the part being bruised as well as torn. A *punctured* wound is one made with a narrow pointed instrument as a sword or bayonet. In incised wounds the first thing to be attended to is to stop the hemorrhage. This is usually accomplished by simply bringing the edges of the wound together; but if any of the larger blood vessels have been injured pressure on the trunk by means of a bandage or burnet will be necessary, and if this is not successful the vessels must be secured with ligatures. Next care should be taken that all extravasated substances are removed from the wound. Then the edges of the wound are to be brought together, and retained either by strips of adhesive plaster or in some situations by one or two sutures. Generally such wounds heal very quickly, without any suppuration taking place, or, notwithstanding, by the first intention. When, however, this is not the case, and suppuration comes on, all attempts to procure union by the first intention should be abandoned, the plasters and bandages removed, poultices and warm dressings had recourse to to remove inflammation, and afterwards healing ointments applied. Lacerated and contused wounds are sure to be similarly treated, but they heal less kindly, and suppuration almost always takes place. The swelling and inflammatory symptoms which com-

Yellow Fever.

monly attend contused wounds are to be diminished by cooling lotions or emollient poultices. Punctured wounds are dangerous from their depth and the internal effusion of serum and blood which usually attends them. They are frequently also followed by severe inflammation and suppuration. The same general principles apply in this case too. Sometimes it may be necessary to enlarge the wound a little, so as to remove the stretching of the parts, and to lessen the inflammation, leeches and fomentations are often required (See GUNSHOT WOUNDS.)

Wryneck [Lat *intubella*] is a peculiar distortion, in which the head is permanently bent down towards one shoulder. Genuine wryneck is produced by the contraction of one sternomastoid muscle. In order to effect a cure, patient is in the horizontal position is enjoin'd with poultices and hot fomentatio n to the part and purgatives, followed by tonics, and a generous diet. During this it may be necessary to divide the muscle.

Y.*Yams (S. DIOSCORIS)**Yaws (S. PLAUTUS)**Yellow Fever (S. C. RIVISTA FRANCESA)*

Yellow Fever, / / / is a disease peculiar to warm countries, more particularly in low lying districts near the sea coast, and is frequent occurrence on the east and west coasts of America, in the West Indies, and in Africa. **Character**—The most marked characteristics of this disease are a yellowness of the skin, general pain, and the vomiting of black or dark coloured fluid when about to terminate fatally, but these features are not always present. Otherwise it is the character of a common remittent fever. The mortality from this disease is very great, more particularly among the young and robust and hence it is very fatal among slaves and negroes. **Symptoms**—Its attack is sudden, but it is usually preceded by a feeling of weakness and sickness, followed within a few hours with faintness, coldness of the head, with a slight degree of chilliness, and sometimes actual shivering. This is immediately succeeded by a high degree of fever, with great heat and violent sweating in all the arteries of the body, particularly observable in the carotid and temporal arteries, flushed in the face, spasms for cool air, white tongue, but tinged with yellow after the retching, have commenced, excessive thirst, redness, heaviness, and burning in the eyes, heaviness and darting pains in the head and small of the back, and often down the thighs, pulse

Yellow Fever.

quick, generally full and strong, but sometimes low and vacillating, skin hot and dry; sickness of stomach, followed by retchings, in which bilious matter is brought up, soreness and intense heat about the precordia, anxiety, great restlessness, heavy respiration, sighing, scanty and dusky coloured urine. This is the first or inflammatory stage of the fever, and may continue from 24 to 48 or 60 hours. It is succeeded by a sudden abatement of most of the preceding symptoms, and sometimes there is a deceiving tranquillity. The retchings are still violent, but the pulse flags, the heat subsides, the skin is soft and clammy, the urine small in quantity, and of a dark croceous colour, a yellow tinge is observed in the eyes, neck, and breast, which afterwards extends itself over the body, there is confusion in the head, and sometimes delirium, with the eyes glassy. This stage may continue from 12 to 48 hours, but never longer. In the third and last stage, the pulse sinks, and becomes unequal and intermittent. Sometimes very quick, the vomiting is frequent with great straining and noise, and lately is of a dark and mucous looking fluid which has been called the black vomit. The countenance becomes more and more collapsed, the eye loses its full and prominent character, dark coloured blotches and petechiae occur on the body, the exhalation becomes greater, the respiration hurried and hasty, the surface and extremities cold and covered with a general clammy perspiration, till at length death supervenes. Sometimes the disease proceeds with fearful rapidity, and the patient is carried off in four-and-twenty hours.

Treatment.—With respect to the treatment of this disease, much difference of opinion prevails. It may however, be safely stated that the remedies should be suited to meet the particular forms of the disease, anti-phlogistic in the inflammatory, and stimulant in the exhausted stages. Hence, at the commencement of the attack, blood letting is recommended wherever the patient will bear it. All the depurative functions require to be kept in activity by doses of mercury purgatives and diuretiques. Mercurius is spoken of as one of the most important remedies in this disease. Many also speak very highly of morphine as a remedy, but it requires to be administered with great caution, particularly where there is any tendency to suppression of urine. Gutt. nitri is recommended for lubricating, defending, and soothing the raw surfaces (upping, loaching, and blisters) have been found useful in alleviating the primary head symptoms, and irritability of stomach, when applied respectively to the nape of the neck or epigastrum.

Zymotic Diseases.

Z.

Zea, se a, a gen of grasses. *Z. May* is the Indian corn or maize plant. It is the most fattening of all the cereals, but it frequently produces diarrhea. Maize meal is sold under the name of *polenta*, and maize starch under the names of *corn flour*, *maizena* &c.

Zinc, zil [Ger.] — Zinc is a bluish white inelastic metal, having a crystalline lamellar structure, moderate hardness, and fusing at 773° Fahr. It is abundantly distributed in the form of minute ores throughout the world. *Oxide of zinc* is a light white powder, which becomes yellow when heated, regaining its whiteness when it cools. When exposed to the air, it becomes converted into a carbonate. In Medicine, oxide of zinc is used externally, or in the form of ointment, as an astringent and leucocid and internally as a tonic especially in cases of nervous debility brought on by drinking. Dose from 1 to 10 grains. *Nitrate of zinc* is prepared by dissolving zinc in dilute nitric acid. *Sulphate of zinc* or *white vitriol*, is used in Medicine in ointments. In small doses of 1 or 2 grains it is tonic and astringent, and is used chiefly in spasmodic diseases, as epilepsy, chorea, &c. It is also used as a syphilis, and as a wash for indolent ulcers. It is soluble in 1 part of water but insoluble in alcohol. *C. tonante* or *calamine* is the chief ore of zinc, and is employed in its impure state in Medicine as an astringent, and in healing ulcers. The *Acetate of zinc* is formed of the carbonate (2 ounces), acetic acid (5 fluid ounces) and distilled water (6 fluid ounces), and is given in doses of 1 to 2 grains as a tonic and 1, to 10 grains as an emetic. *Chloride of zinc* is remarkably soluble in water, and its strong affinity for that substance renders it a powerful desiccating agent in game research. In solution it forms *Burnett's* a disinfecting fluid. It is a powerful exfoliator when applied to the skin, and is used in surgery for that purpose. *Aluminate of zinc* is used in Medicine in combating nervous disorders, in doses of 1 to 3 grains.

Zingiber zim' bir a gen of the net and *Zingiberacee*. *Z. officinale* is the ginger plant, the rhizome of which constitutes the so called ginger root or ginger of the shops. Ginger is extensively used in Medicine as a stimulant and stomachic in dyspepsia flatulence &c. Dose of powder, from 10 to 20 grains. Of the tincture (2½ ounces of the ginger, in coarse powder, to 1 pint of rectified spirit) the dose is from 15 minims to 1 drachm, of the strong tincture or essence of ginger, from 5 to 10 minims, of the syrup (6 drachms of the strong tincture to 19 fluid ounces of syrup mixed), 1 fluid drachm.

ZYMOtic DISEASES (See Nopologus)

